SONY

BLACK AND WHITE VIDEO CAMERA & COLOR VIDEO CAMERA

SSC-M183/M183CE
SSC-M188CE
SSC-M383/M383CE
SSC-M388CE
SSC-DC193/DC193P
SSC-DC198P
SSC-DC393/DC393P
SSC-DC398P

SERVICE MANUAL

1st Edition

Super HAD CCD®
Exwave HAD™

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Manual Structure

Purpose of this manual

This manual is the Service Manual of the Black and White Video Camera & Color Video Camera SSC-M183/M183CE/M188CE/M383/M383CE/M388CE/DC193/DC193P/DC198P/DC393/DC393P/DC398P.
This manual contains service overview, adjustment, troubleshooting, spare parts and block diagrams.

Related manuals

In addition to this Service Manual, the following manuals is provided.

- **Operating Instructions (Supplied for products)**
  Part No.: 3-206-754-11
  (For SSC-M183/M183CE/M188CE/M383/M383CE/M388CE)
  Part No.: 3-206-753-11
  (For SSC-DC193/DC193P/DC198P/DC393/DC393P/DC398P)
  This manual describes the information required for the proper operation and application of this unit.

Trademarks

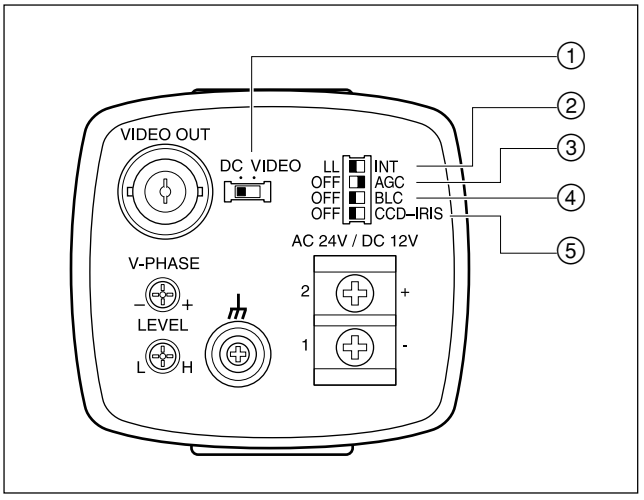
Trademarks and registered trademarks used in this manual are follows.

• Windows and Windows NT are registered trademarks of Microsoft Corporation.

Section 1
Service Overview

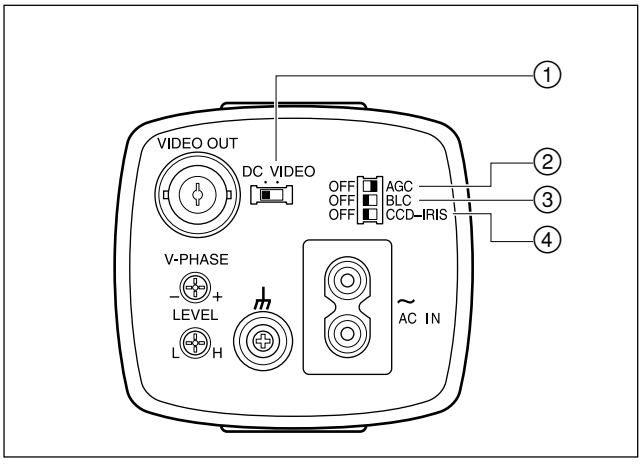
1-1. Factory Default Setting of Switch

For SSC-DC193/DC193P/DC393/DC393P/M183/ M183CE/M383/M383CE



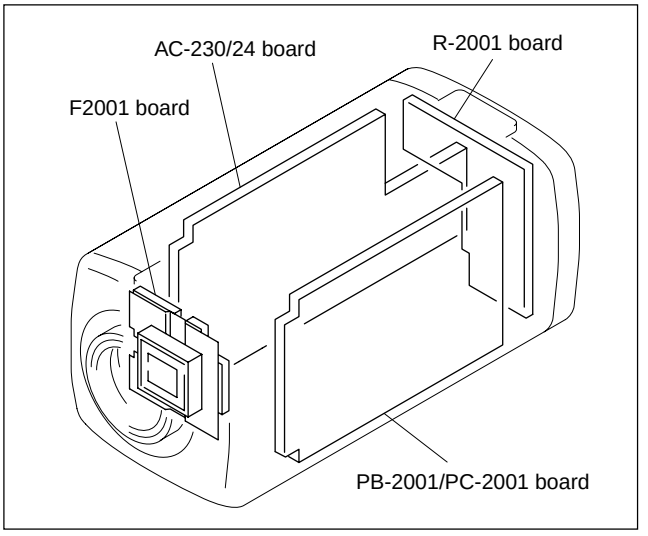
No.	Description	Factory default setting
①	Auto iris lens selection switch	DC
②	Sync switch	LL
③	AGC ON/OFF switch	AGC
④	BLC ON/OFF switch	OFF
⑤	CCD-IRIS ON/OFF switch	OFF

For SSC-DC198P/DC398P/M188CE/M388CE



No.	Description	Factory default setting
①	Auto iris lens selection switch	DC
②	AGC ON/OFF switch	AGC
③	BLC ON/OFF switch	OFF
④	CCD-IRIS ON/OFF switch	OFF

1-2. Board Location

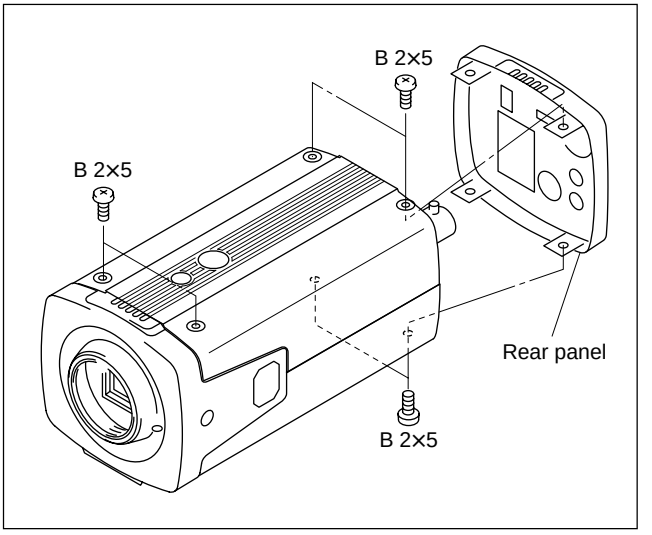


Board name	Use model
AC-230board	SSC-M188CE/M388CE
	SSC-DC198P/DC398P
AC-24 board	SSC-M183
	SSC-M183CE
	SSC-M383
	SSC-M383CE
	SSC-DC193
	SSC-DC193P
	SSC-DC393
	SSC-DC393P
PB-2001 board	SSC-M183
	SSC-M183CE
	SSC-M188CE
	SSC-M383
	SSC-M383CE
	SSC-M388CE
PC-2001 board	SSC-DC193
	SSC-DC193P
	SSC-DC198P
	SSC-DC393
	SSC-DC393P
	SSC-DC398P
F2001 Board	Common use
R-2001 Board	SSC-M183/M183CE/M383/M383CE
	SSC-M188CE/M388CE
	SSC-DC193/DC193P/DC393/DC393P
	SSC-DC198P/DC398P

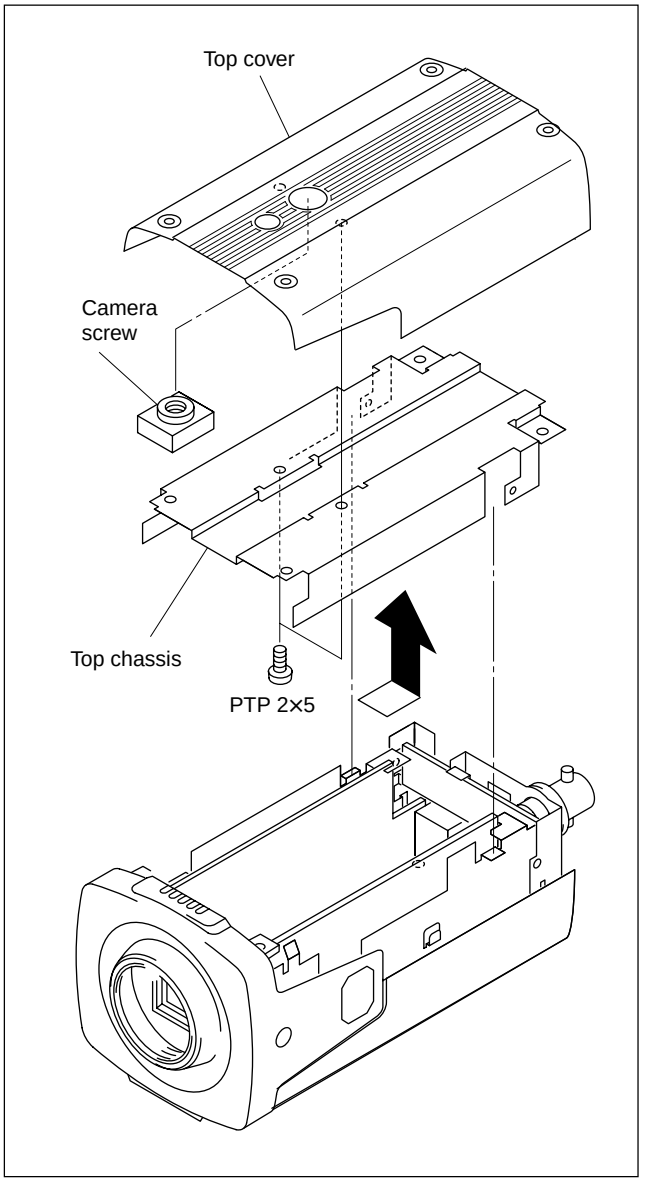
1-3. Installation/Removal of Cabinet

1-3-1. Top Cover

1. Remove the six screws, then remove the rear panel.



2. Remove the top cover in the direction indicated by the arrow.
3. Remove the two screws, then remove the top chassis and camera screw.

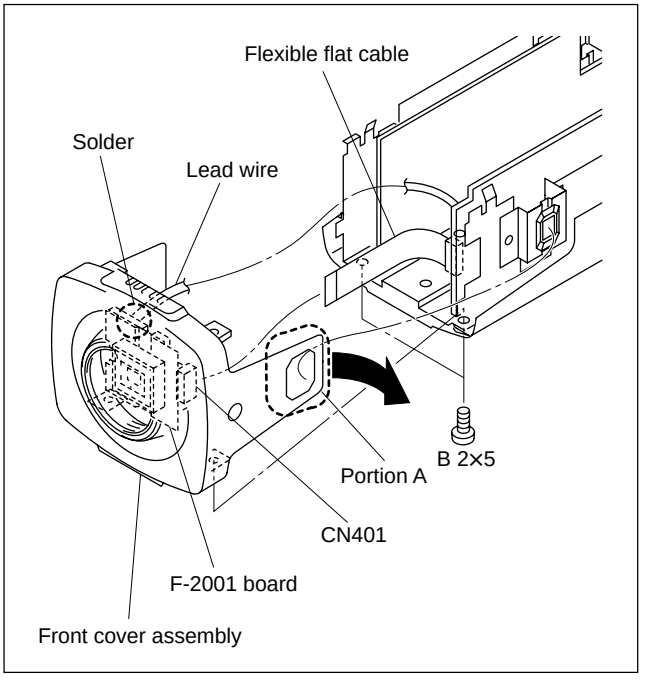


4. Attach the top cover in the reverse order of steps 1 to 3.

1-3-2. Front Cover Assembly

For SSC-M183/M183CE/M188CE/M383/M383CE/M388CE

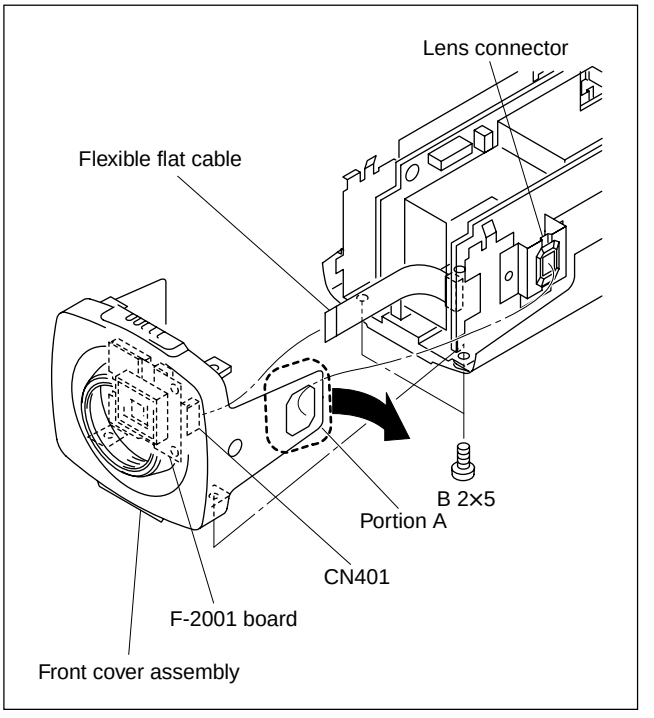
1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the two screws.
3. Move portion A of the front cover assembly in the direction indicated by the arrow, then remove the front cover assembly.
4. Disconnect one flexible flat cable from the connector (CN401) on the F-2001 board.
5. Remove one solder from the F-2001 board, then disconnect one lead wire.



6. Attach the front cover assembly in the reverse order of steps 1 to 5.

For SSC-DC193/DC193P/DC198P/DC393/DC393P/DC398P

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the two screws.
3. Move portion A of the front cover assembly in the direction indicated by the arrow, then remove the front cover assembly.
4. Disconnect one flexible flat cable from the connector (CN401) on the F-2001 board.



5. Attach the front cover assembly in the reverse order of steps 1 to 4.

1-3-3. Bottom Cover

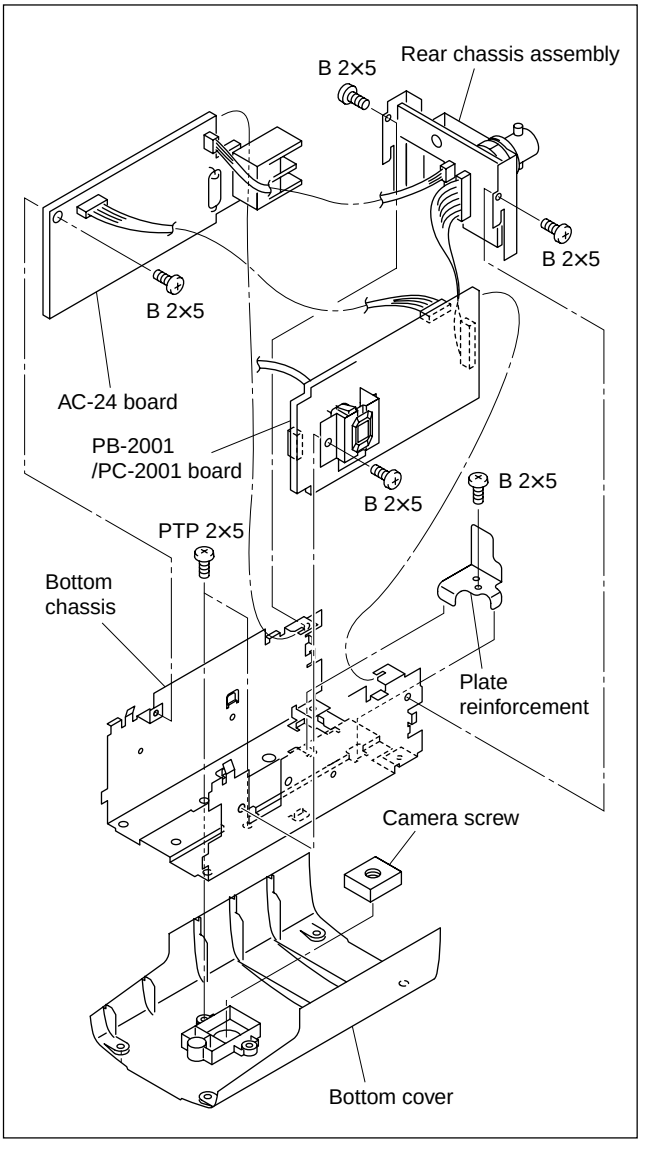
Note

Be sure to attach the plate reinforcement in place.
For details on the installation of the plate reinforcement, refer to Section 1-6.

For SSC-M183/M183CE/M383/M383CE/DC193/DC193P/DC393/DC393P

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the two screws (B 2×5), then remove the rear chassis assembly.

4. Remove one screw (B 2×5), then remove the PB-2001/PC-2001 board from the bottom chassis. (Refer to Section 1-3-3.)
5. Remove one screw (B 2×5), then remove the plate reinforcement. (Refer to Section 1-6.)
6. Remove one screw (B 2×5), then remove the AC-24 board from the bottom chassis. (Refer to Section 1-4-3.)
7. Remove the two screws (PTP 2×5), then remove the bottom chassis and camera screw from the bottom cover.



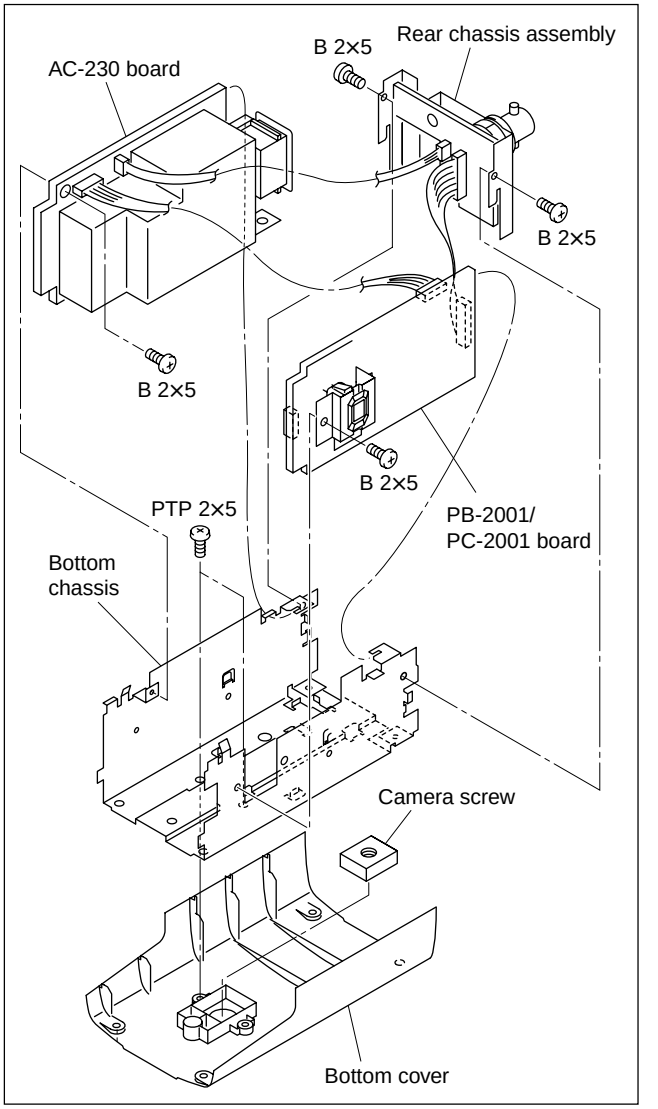
Note

Before attaching the rear chassis assembly, securely attach the AC-24 board.

8. Attach the bottom cover in the reverse order of steps 1 to 7.

For SSC-M188CE/M388CE/DC198P/DC398P

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the two screws, then remove the rear chassis assembly.
4. Remove one screw, then remove the PB-2001/PC-2001 board from the bottom chassis. (Refer to Section 1-3-3.)
5. Remove one screw, then remove the AC-230 board from the bottom chassis. (Refer to Section 1-4-3.)
6. Remove the two screws, then remove the bottom chassis and camera screw from the bottom cover.



Note

Before attaching the rear chassis assembly, securely attach the AC-230 board.

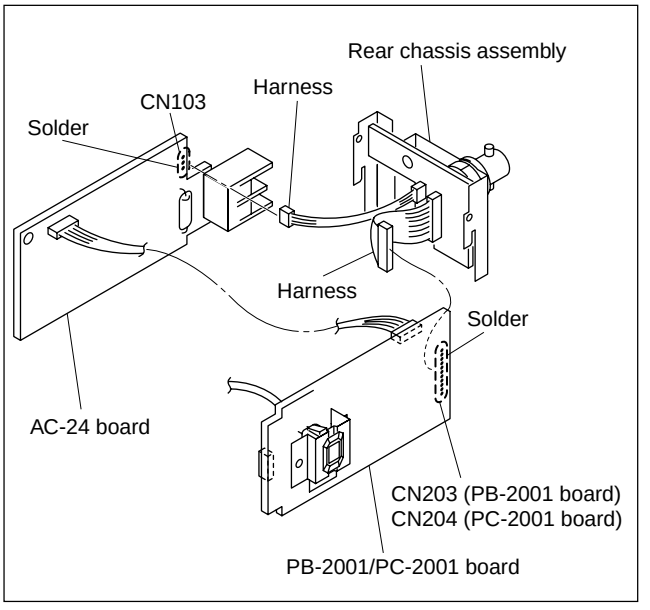
7. Attach the bottom cover in the reverse order of steps 1 to 6.

1-4. Installation/Removal of Board

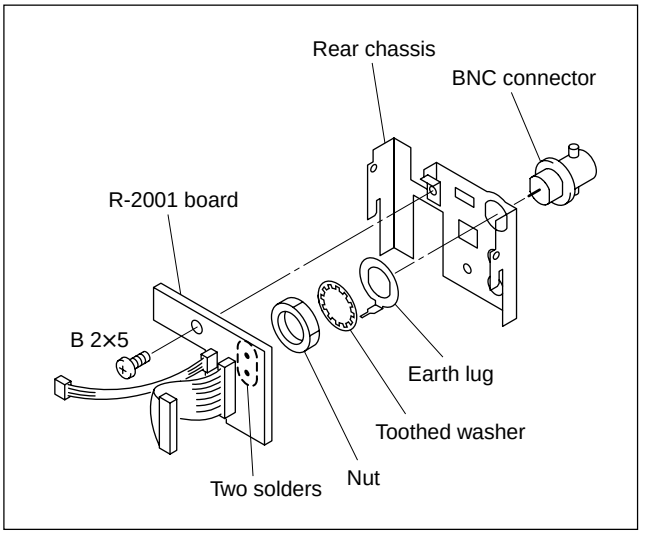
1-4-1. R-2001 Board

For SSC-M183/M183CE/M383/M383CE/DC193/ DC193P/DC393/DC393P

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the rear chassis assembly. (Refer to Section 1-3-3.)
4. Remove the PB-2001/PC-2001 board from the bottom chassis. (Refer to Section 1-3-3.)
5. Remove the AC-24 board from the bottom chassis. (Refer to Section 1-3-3.)
6. Remove the solder from the connector (CN203/204) on the PB-2001/PC-2001 board, then disconnect one harness.
7. Remove the solder from the connector (CN103) on the AC-24 board, then disconnect one harness.



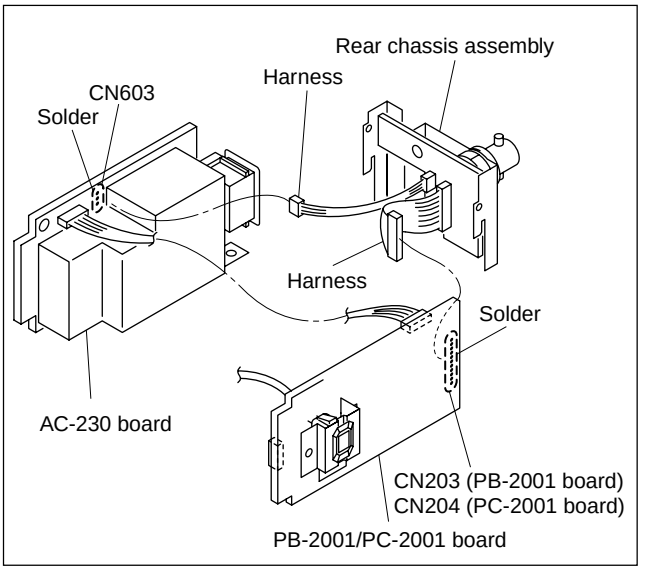
8. Remove one screw and two solders, then remove the R-2001 board.
9. Remove the nut, then remove the toothed washer, earth lug and BNC connector from the rear chassis.



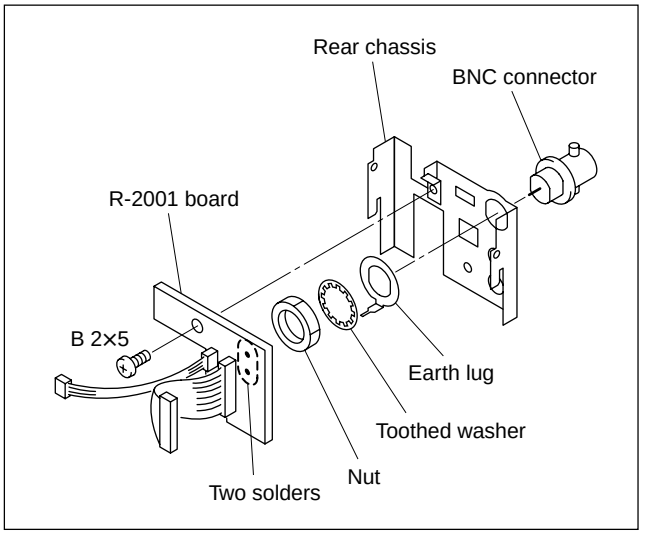
10. Attach the R-2001 board in the reverse order of steps 1 to 9.

For SSC-M188CE/M388CE/DC198P/DC398P

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the rear chassis assembly. (Refer to Section 1-3-3.)
4. Remove the PB-2001/PC-2001 board from the bottom chassis. (Refer to Section 1-3-3.)
5. Remove the AC-230 board from the bottom chassis. (Refer to Section 1-3-3.)
6. Remove the solder from the connector (CN203/204) on the PB-2001/PC-2001 board, then disconnect one harness.
7. Remove the solder from the connector (CN603) on the AC-230 board, then disconnect one harness.



8. Remove one screw and two solders, then remove the R-2001 board.
9. Remove the nut, then remove the toothed washer, earth lug and BNC connector from the rear chassis.



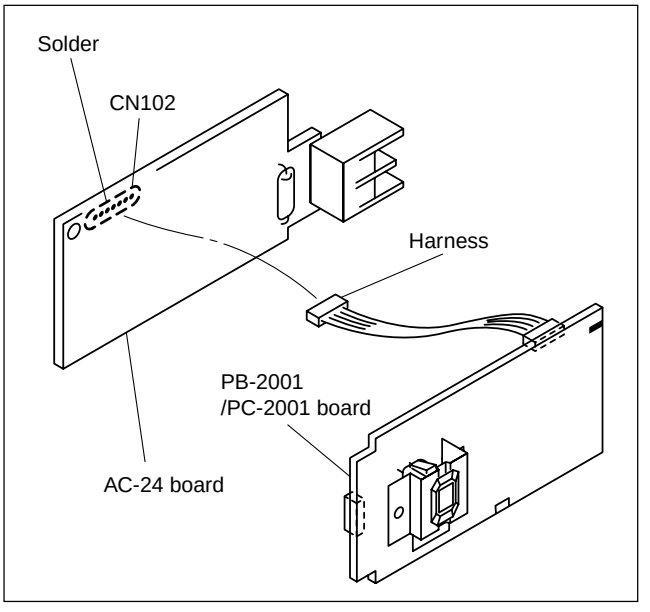
10. Attach the R-2001 board in the reverse order of steps 1 to 9.

1-4-2. PB-2001/PC-2001 Board

For SSC-M183/M183CE/M383/M383CE/DC193/ DC193P/DC393/DC393P

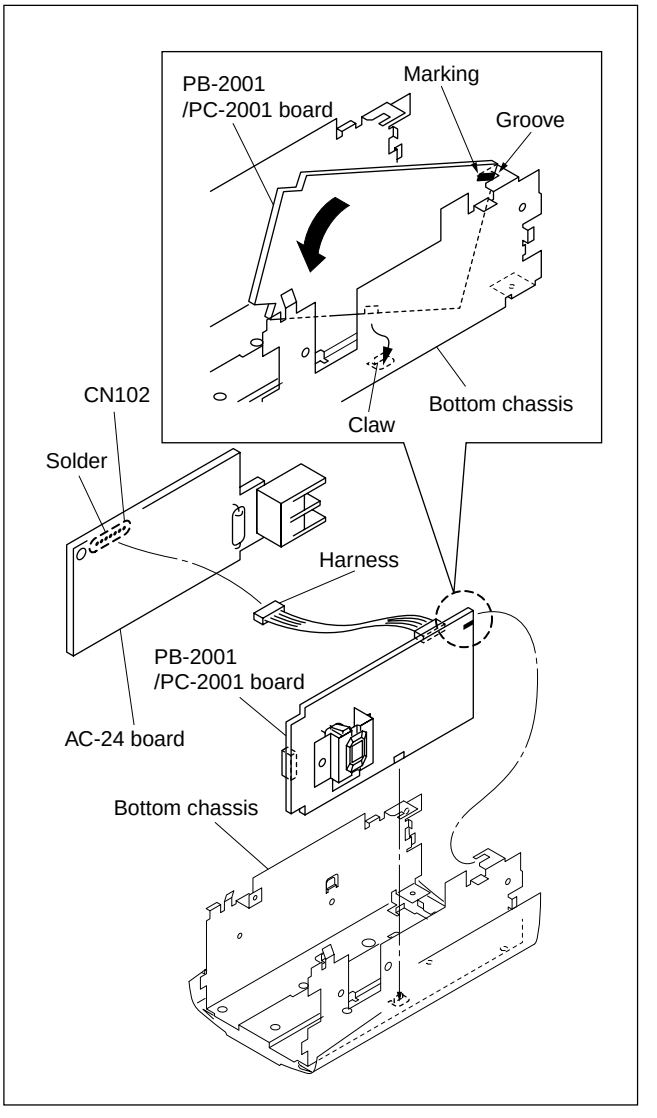
Removal

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the rear chassis assembly. (Refer to Section 1-3-3.)
4. Remove the plate reinforcement. (Refer to Section 1-6.)
5. Remove the PB-2001/PC-2001 board from the bottom chassis. (Refer to Section 1-3-3.)
6. Remove the AC-24 board from the bottom chassis. (Refer to Section 1-3-3.)
7. Remove the solder from the connector (CN102) on the AC-24 board, then remove the PB-2001/PC-2001 board.



Installation

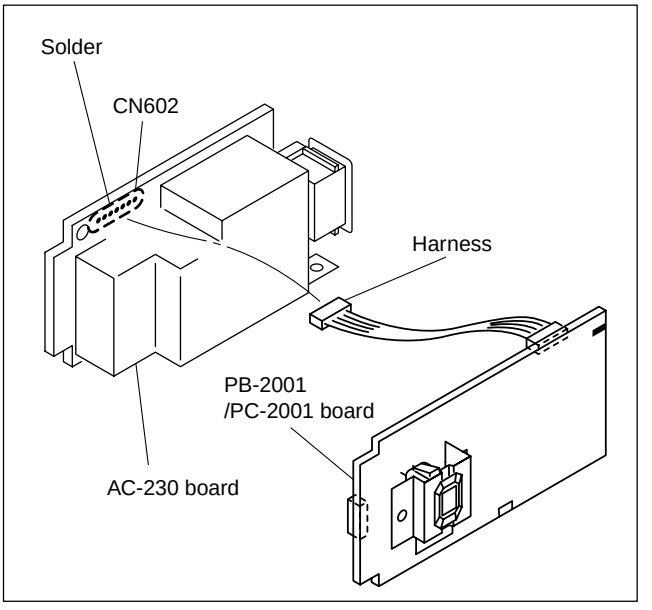
1. Attach the AC-24 board in the reverse order of steps 6 and 7 of the Removal.
2. Insert the marking section of the PB-2001/PC-2001 board into the groove of the bottom chassis, then attach in the direction indicated by the arrow.
3. Attach the PB-2001/PC-2001 board so that it is placed outside of the claw of the bottom chassis.
4. Attach the PB-2001/PC-2001 board in the reverse order of steps 1 to 3.



For SSC-M188CE/M388CE/DC198P/DC398P

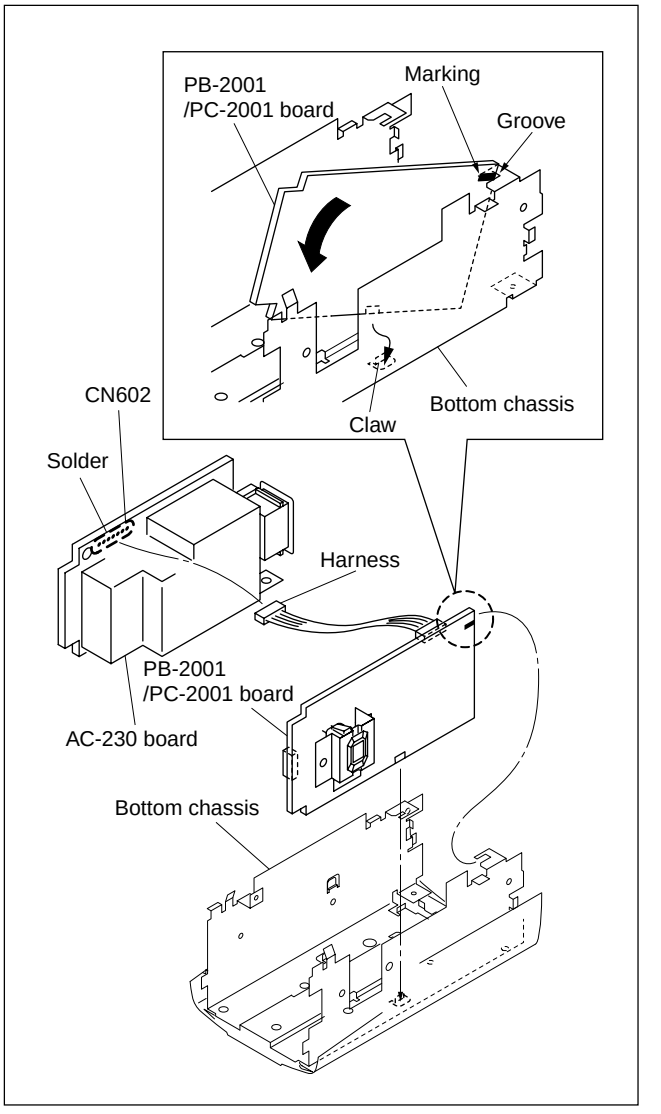
Removal

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the rear chassis assembly. (Refer to Section 1-3-3.)
4. Remove the plate reinforcement. (Refer to Section 1-6.)
5. Remove the PB-2001/PC-2001 board from the bottom chassis. (Refer to Section 1-3-3.)
6. Remove the AC-230 board from the bottom chassis. (Refer to Section 1-3-3.)
7. Remove the solder from the connector (CN602) on the AC-230 board, then remove the PB-2001/PC-2001 board.



Installation

1. Attach the AC-230 board in the reverse order of steps 6 and 7 of the Removal.
2. Insert the marking section of the PB-2001/PC-2001 board into the groove of the bottom chassis, then attach in the direction indicated by the arrow.
3. Attach the PB-2001/PC-2001 board so that it is placed outside of the claw of the bottom chassis.
4. Attach the PB-2001/PC-2001 board in the reverse order of steps 1 to 3.

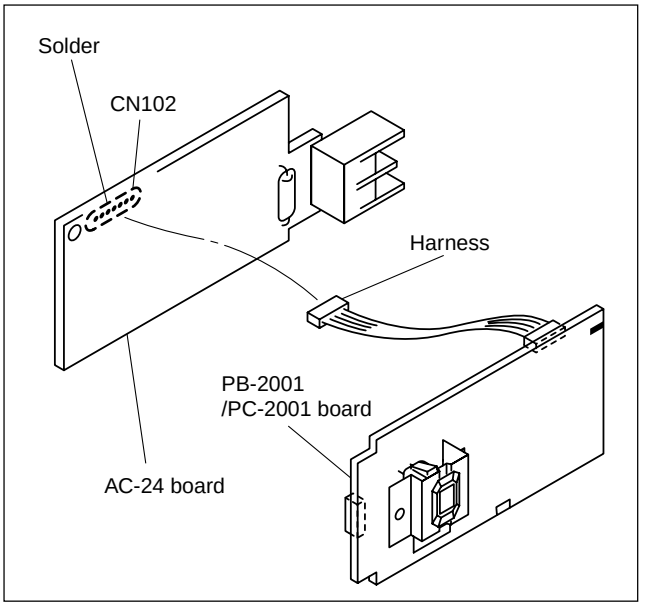


1-4-3. AC-24/230 Board

For SSC-M183/M183CE/M383/M383CE/DC193/ DC193P/DC393/DC393P

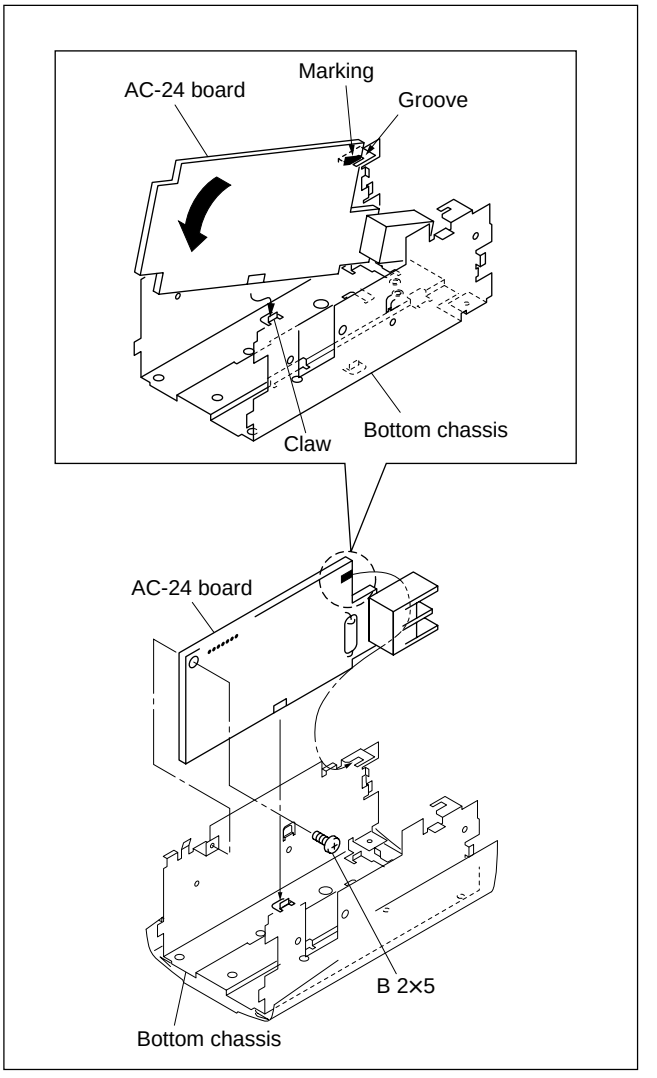
Removal

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the rear chassis assembly. (Refer to Section 1-3-3.)
4. Remove the plate reinforcement. (Refer to Section 1-6.)
5. Remove the PB-2001/PC-2001 board from the bottom chassis. (Refer to Section 1-3-3.)
6. Remove the AC-24 board from the bottom chassis. (Refer to Section 1-3-3.)
7. Remove the solder from the connector (CN102) on the AC-24 board, then remove the AC-24 board.



Installation

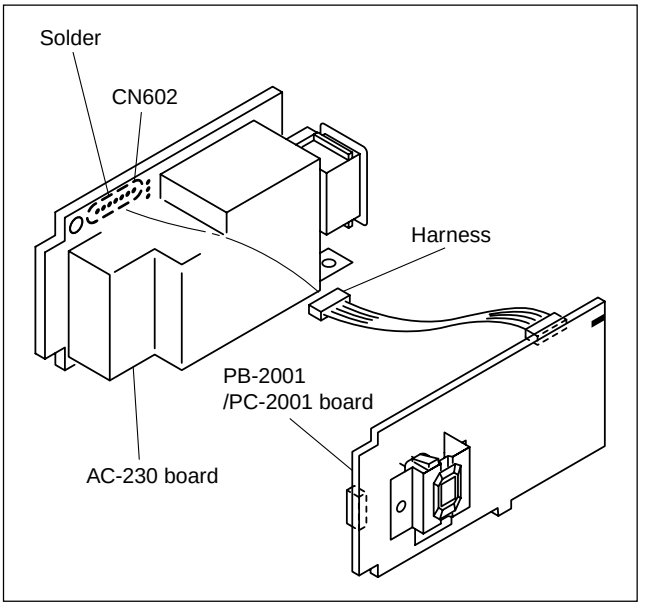
1. Attach the AC-24 board in the reverse order of steps 5 and 6.
2. Insert the marking section of the AC-24 board into the groove of the bottom chassis, then attach in the direction indicated by the arrow.
3. Attach the AC-24 board so that it is placed outside of the claw of the bottom chassis.
4. Attach the AC-24 board in the reverse order of steps 1 to 4.



For SSC-M188CE/M388CE/DC198P/DC398P

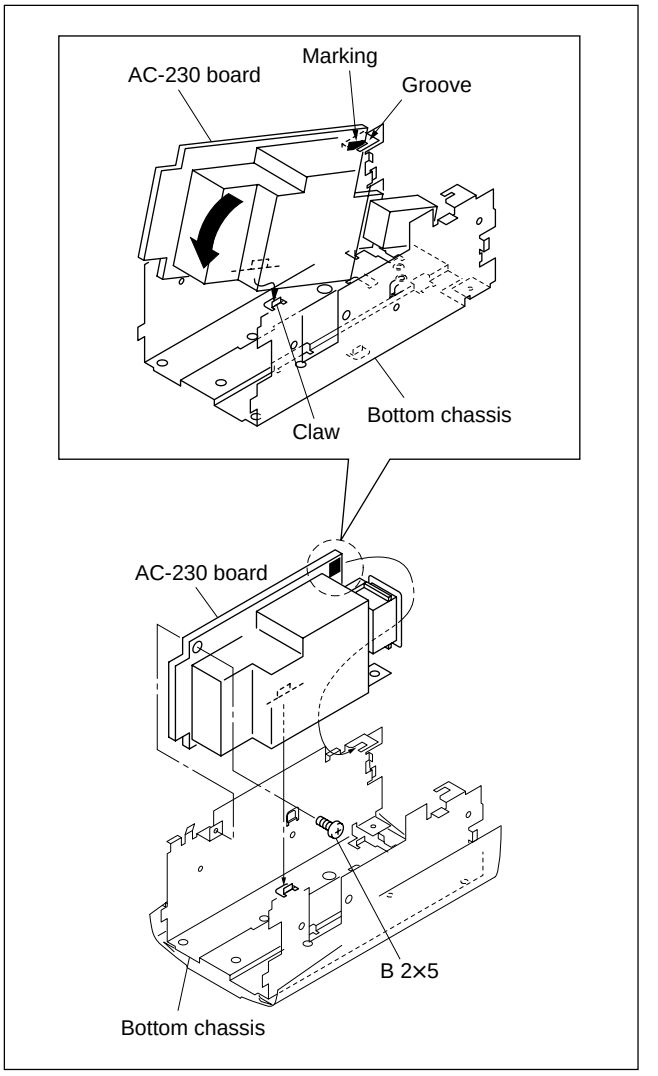
Removal

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the rear chassis assembly. (Refer to Section 1-3-3.)
4. Remove the PB-2001/PC-2001 board from the bottom chassis. (Refer to Section 1-3-3.)
5. Remove the AC-230 board from the bottom chassis. (Refer to Section 1-3-3.)
6. Remove the solder from the (CN602) connector on the AC-230 board, then remove the AC-230 board.



Installation

1. Attach the AC-230 board in the reverse order of steps 5 and 6.
2. Insert the marking section of the AC-230 board into the groove of the bottom chassis, then attach in the direction indicated by the arrow.
3. Attach the AC-230 board so that it is placed outside of the claw of the bottom chassis.
4. Attach the AC-230 board in the reverse order of steps 1 to 4.



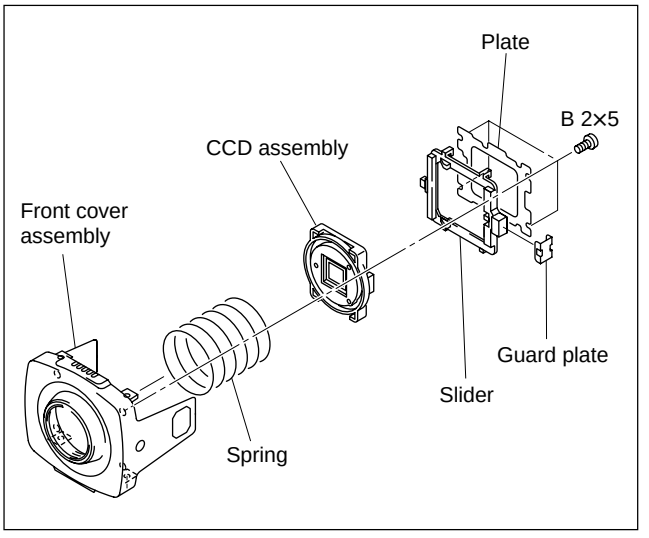
1-5. CCD Assembly

For SSC-M183/M183CE/M383/M383CE/DC193/DC193P/DC393/DC393P

Note

When removing the screw of the retaining plate, be careful of the spring between the front cover and the CCD cover since it may pop up.

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the four screws (B 2×5) from the front cover assembly, then remove the plate, guard plate, slider, CCD cover and spring.
4. Remove the CCD assembly.



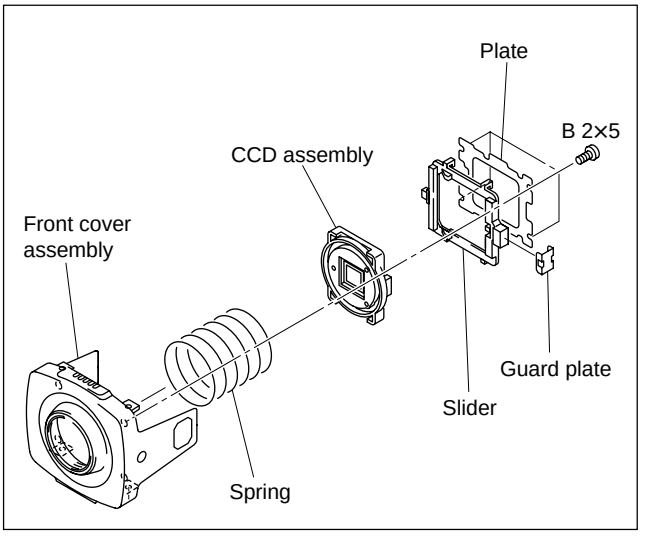
5. Attach the CCD assembly in the reverse order of steps 1 to 4.

For SSC-M188CE/M388CE/DC198P/DC398P

Note

When removing the screw of the retaining plate, be careful of the spring between the front cover and the CCD cover since it may pop up.

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the four screws (B 2×5) from the front cover assembly, then remove the plate, guard plate, slider, CCD cover and spring.
4. Remove the CCD assembly.

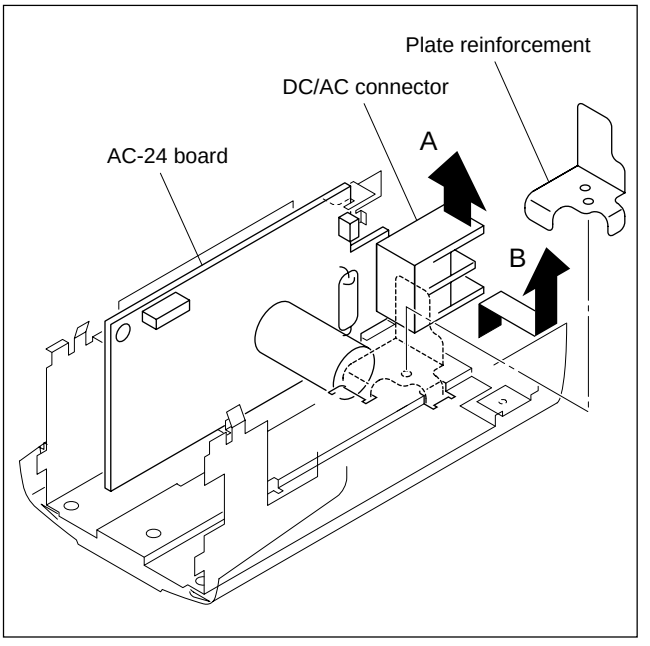


5. Attach the CCD assembly in the reverse order of steps 1 to 4.

1-6. Plate Reinforcement

For SSC-M183/M183CE/M383/M383CE/DC193/ DC193P/DC393/DC393P

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front cover assembly. (Refer to Section 1-3-2.)
3. Remove the rear chassis assembly. (Refer to Section 1-3-3.)
4. Remove the PB-2001 board. (Refer to Section 1-4-2.)
5. Remove one screw and slightly raise the DC/AC connector on the AC-24 board in the direction indicated by the arrow A, then remove the plate reinforcement in the direction indicated by the arrow B.



6. Attach the plate reinforcement in the reverse order of steps 1 to 5.

Section 2
Confirmation and Adjustment

Note

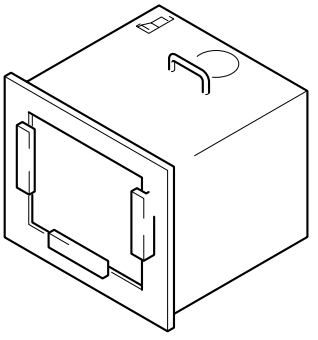
The confirmation and adjustment described in this section are intended only for the color models. In the B & W models, confirmation and adjustment are not required.

2-1. Adjustment Tools and Required Equipment

2-1-1. Adjustment Tools and Required Equipment

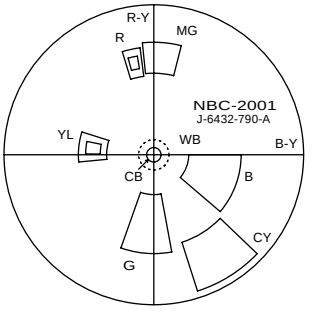
J-6029-140-B	Pattern Box PTB-500
J-6029-850-A	Pattern Box PTB-700

• For the light source of test chart

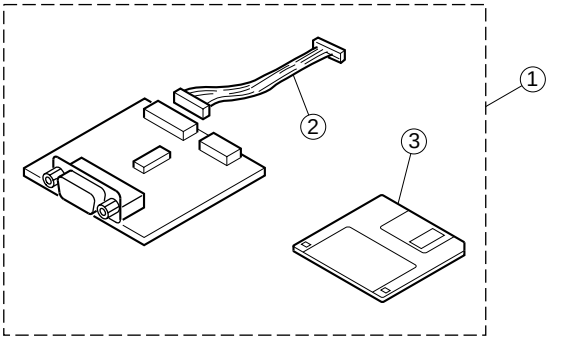


J-6432-790-A	Vectorscope Scale

• For the color reproduction adjustment
This scale is printed on the rear cover paper.



① J-6432-780-A	Set of adjusting tool
② J-6432-780-3	Adjustment harness
③ J-6432-780-4	Adjustment software

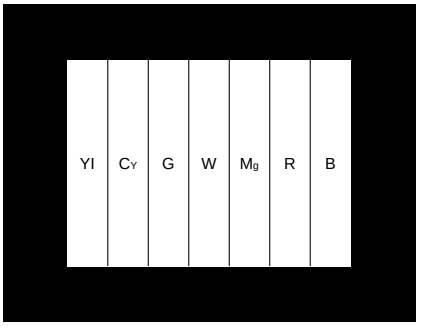


Note

When you need an adjusting tool board, order ① (J-6432-780-A).
(All the parts are included in ①.)

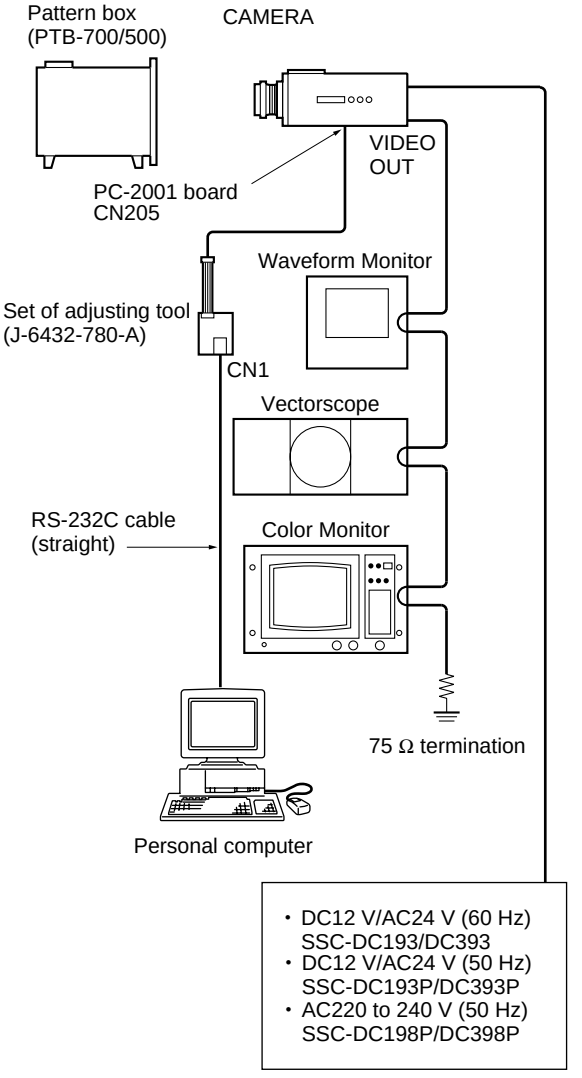
J-6027-100-A	Color Bar Chart (For PTB-700)
J-6020-250-A	Color Bar Chart (For PTB-500)

• For the color reproduction adjustment



- Oscilloscope
- Digital voltmeter
- Vectorscope
- Waveform Monitor
- Color Monitor
- Personal computer
- RS-232C cable (Straight)

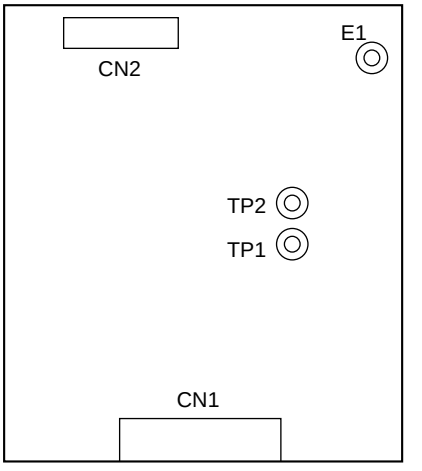
2-1-2. Connection Diagram



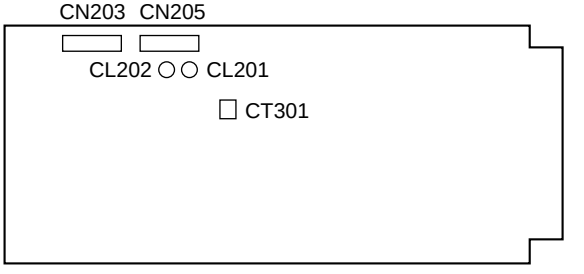
2-1-3. Signal Measuring Connectors for Confirmation and Adjustment

The signal required for confirmation can be obtained from the test pin of the PC-2001 board of this unit. The signal required for adjustment can be obtained from the test pin of the adjusting tool board.

TP1: CCD LEVEL
TP2: A/D IN
E1: GND

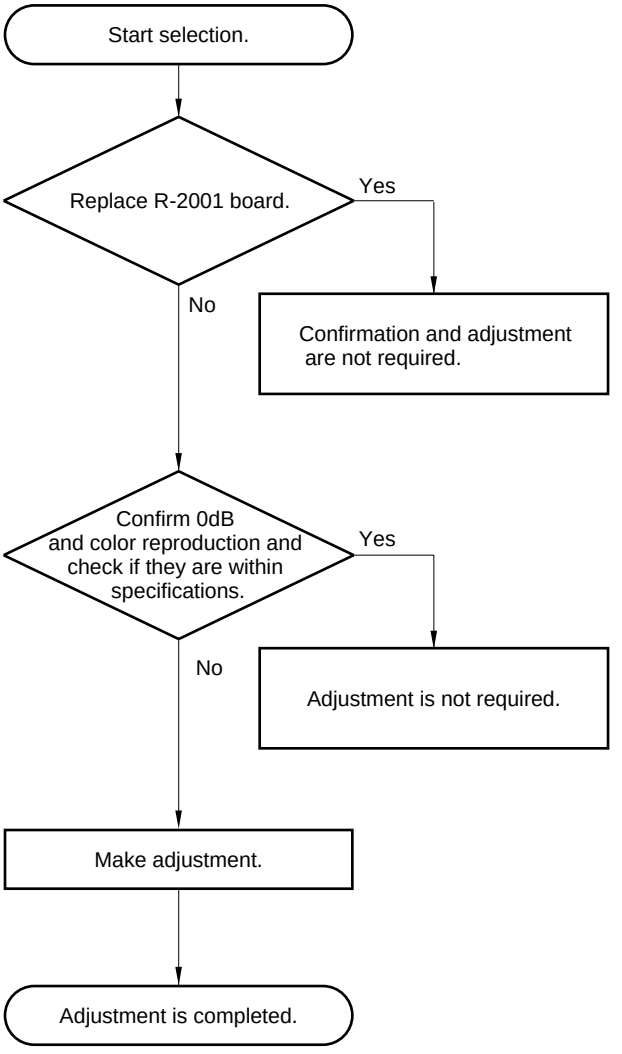


Adjusting tool board



PC-2001 board (Side B)

2-1-4. Selection Flow of Required Items for Adjustments of 0 dB and Color Reproduction



2-2. Confirmation

2-2-1. Confirmation of 0 dB adjustment

1. Set the AGC and CCD-IRIS switches on the rear panel of camera to OFF.
2. Shoot the image of 100% white pattern and adjust the lens aperture so that the CCD LEVEL meets the specification.

Subject	100% white pattern
Measuring point	PC-2001 board CL201 (CCD LEVEL)
Measuring equipment	Oscilloscope (AC50 mV, 10 μS)
Specification	250 ±20 mV

3. Confirm that the A/D IN (CL202/PC-2001 board) is within the range of specification.

Subject	100% white pattern
Measuring point	PC-2001 board CL202 (A/D IN)
Measuring equipment	Oscilloscope (AC200 mV, 10 μS)
Specification	800 $^{+60}_{-20}$ mV

Note

When there is a point that meets the specification of 3 after adjusting the lens aperture within the range of specification of 2, this means that the adjustment is correctly made.

2-2-2. Confirmation of Color Reproduction Adjustment

1. Set the AGC and CCD-IRIS switches on the rear panel of camera to OFF.
2. Shoot the image of color bar chart.
3. Adjust the lens aperture so that the VIDEO OUT white level is within the range of specification.

Subject	Color bar chart
Measuring equipment	VIDEO OUT white level
Mode indication	Waveform monitor
Specification	90.0 ±2.5 IRE (NTSC)
	640 ±18 mV (PAL)

4. Check that the center of luminance point in all colors is within the range of color reproduction of each color.

Subject	Color bar chart
Measuring equipment	VIDEO OUT white level
Mode display	Vectorscope
Specification	Center of luminance point in all colors is within the range of color reproduction of each color.

Note

When there is a point that meets the specification of 4 after adjusting the lens aperture within the range of specification of 3, this means that the adjustment is correctly made.

2-3. Adjustment

Note

Make adjustment when the specifications are not met in "2-2 Confirmation" or when correcting white spots that appeared subsequently (Section 2-4).

2-3-1. Adjustment Software

Function

- Makes adjustment of the 0 dB of camera and color reproduction after replacement of board.
- Compensates for a maximum of two defects in the case of defect in CCD.

Operating Environment

- OS: Microsoft Windows 95/98/NT4.0/Me/2000
- Memory: 32M or more
- Processor: Pentium
- HDD: 1M or more of free space
- Port: RS232C port shall be included.

Required File

BoxCam.exe: Adjustment program
The initialization file "BoxCam.ini" to record the setting information such as RS232C selection port is automatically created and saved when the program is executed.

RS232C Cable

Use a general-purpose straight cable for the RS232C cable.

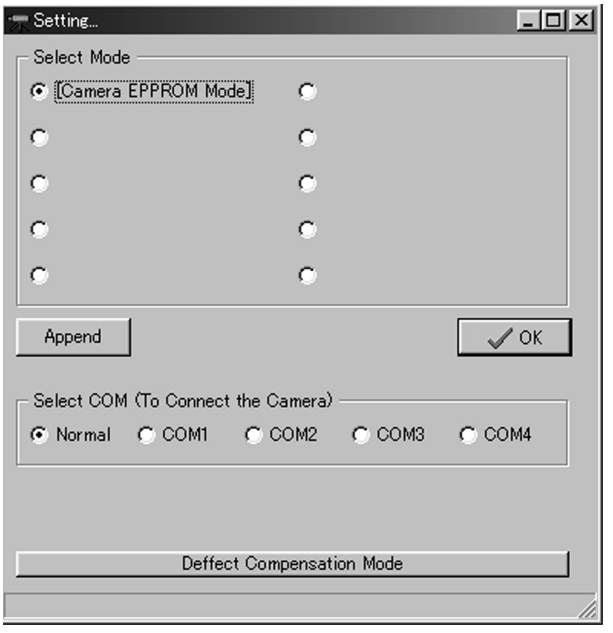
Setting

Basically, set only the port to be connected. Other settings are automatically set as follows by the software when "BoxCam.exe" is executed.

- Transmission speed: 9600bps
- Data length: 8 bits
- Parity: None
- Start bit: 1
- Stop bit: 1
- Flow control: None

2-3-2. Preparation for Adjustment

1. Connect one end of the RS-232C cable to the COM (RS-232C) port of the personal computer (referred to as PC hereafter) and other end to the connector (CN1) on the adjusting tool board.
2. Perform the setting of camera with the switches on the rear panel.
3. Connect the harness connector of the adjusting tool board to the connector (CN205) on the PC-2001 board.
4. Turn on the power of camera and PC.
5. After starting the PC, start the adjustment software “BoxCam.exe”.
6. The setting screen is displayed. In “SelectCOM”, select the port to which the RS-232C cable is connected.
7. Press OK. The setting of BoxCam adjustment software is completed.



Name of switch	SSC-DC193 SSC-DC193P SSC-DC393 SSC-DC393P	SSC-DC198P SSC-DC398P
Sync switch	INT	—
AGC ON/OFF switch	OFF	OFF
BLC ON/OFF switch	OFF	OFF
CCD IRIS ON/OFF switch	OFF	OFF

2-3-3. Reading of Parameter

1. Check that the “START” button of the PC adjustment software is in active state, then press the “START” button.

Note

To make the “START” button active state, press the TAB key several times. Be extremely careful when the “START” button is not in active state, because it is likely that the previous adjustment has not been completed.

Active state

Not in active state

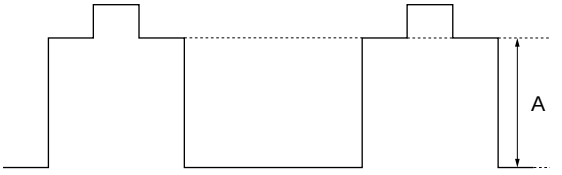
2. Reading of parameter of camera is completed. Check that the following screen is displayed, then turn off the power of camera.

3. Turn on the power of camera again and check that the screen is displayed. Then, click the OK button of the above message.

2-3-4. 0 dB Adjustment

1. Check that 0 dB Adjust is in active state.
   Note
   The value (17 in this case) varies depending on the models.

2. Display 100% white pattern in the pattern BOX.
3. Connect the probe of oscilloscope to the point of TP1 of the adjusting tool board, then adjust the lens aperture so that the level of oscilloscope is within the range of specification A.
   Specification: A = 250 ±20 mV



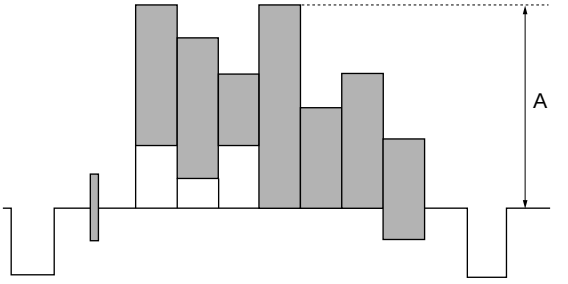
Measuring point: TP1
Adjusting method: Lens aperture
Oscilloscope: AC50 mV
10 µSec

4. Connect the probe of oscilloscope to the point of TP2 of the adjusting tool board with the lens aperture adjusted in the same state as step 3. Make adjustment so that the level of oscilloscope is within the range of specification B using the UP and DOWN arrow keys (↑, ↓) on the keyboard.
   Specification: B = 800 $^{+60}_{-20}$ mV

Measuring point: TP2
Adjustment method: PC keys
Oscilloscope: AC200 mV
10 µSec

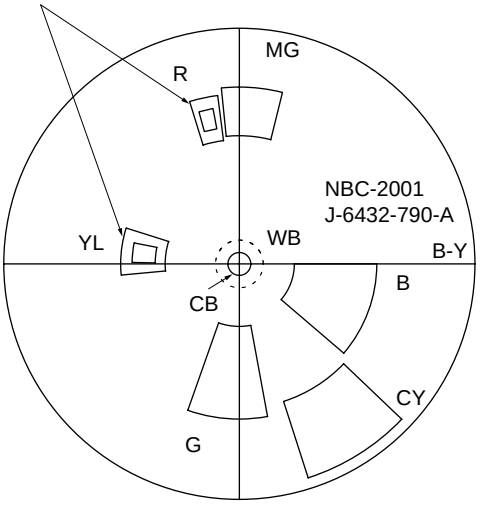
2-3-5. Color Reproduction Adjustment

1. Display the color bar chart in the pattern BOX.
2. Wait until the spot of each color stops moving, then press the TAB key on the keyboard.
3. Adjust the lens aperture so that the white level is within the range of specification A.
   Specification : A = 90 ±2.5IRE (NTSC)
   640 ±18 mV (PAL)



4. Check that RY Gain of Color Adjust is in active state, then make adjustment so that R is within the range of its color reproduction (smaller area) using the UP and DOWN arrow keys (↑, ↓) on the keyboard. Press the TAB key on the keyboard.
5. Check that BY Gain is in active state, then make adjustment so that YL is within the range of its color reproduction (smaller area) in the same way as step 4. Press the TAB key on the keyboard.
6. Check that RY Hue is in active state, then make adjustment so that R is within the range of its color reproduction (smaller area) using the UP and DOWN arrow keys (↑, ↓) on the keyboard. Press the TAB key on the keyboard.
7. Check that BY Hue is in active state, then make adjustment so that YL is within the range of its color reproduction (smaller area) in the same way as step 6.

Make adjustment so that R and YL are within the small area.



8. With R and YL adjusted to be within each smaller area, check that the luminance points of MG, B, G, and CY are also partly within the range of each color reproduction. When there are spots out of the range, make adjustment by performing steps 4 to 7 so that all the luminance points are within each range.

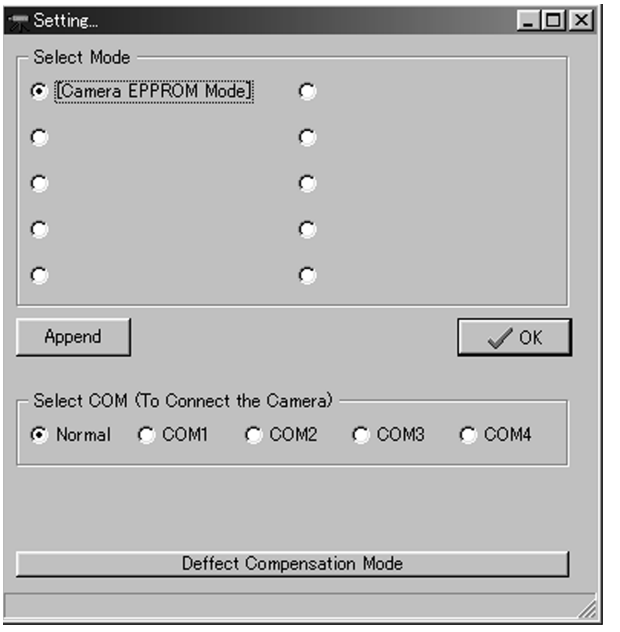
2-3-6. Writing

1. After completing the adjustment, press the TAB key to make the END button active state. (Refer to Section 2-3-3, Step 1)
2. After the END key becomes active state, press the Enter key.
   The writing of adjustment data is executed. The writing will be completed in about 5 seconds.
3. After the message for the completion of writing is displayed, turn off the power of the unit. Press the OK button of the message to clear the message.

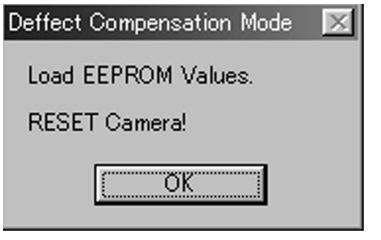
4. Disconnect the camera from the harness of the adjusting tool board, then turn on the power of camera to check that the writing of adjustment data has been correctly completed.

2-4. Correction of Residual Point Noise

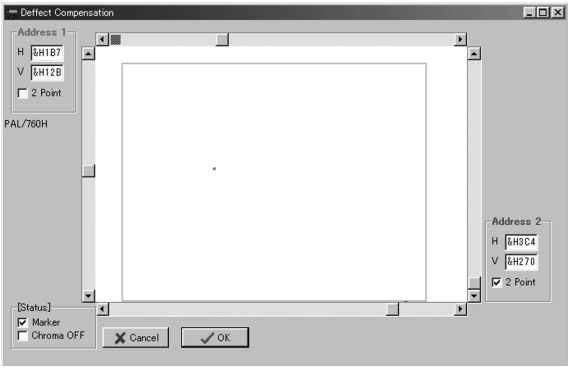
1. Connect one end of the RS-232C cable to the COM (RS-232C) port of the PC and other end to the connector (CN1) on the adjusting tool board.
2. Connect the adjusting tool board (CN205/PC-2001 board) to the camera and turn on the power.
3. Start the PC.
4. After starting the PC, start the adjustment software “BoxCam.exe”.



5. In “SelectCOM”, select the port to which the RS-232C cable is connected.
6. Click the “Defect Compensation Mode” button. The current data is read from the camera.
7. After completion of the reading, the following message is displayed.



8. Turn the power of camera off and on again.
9. Click the OK button. The following screen is displayed. A maximum of two points can be corrected.



10. Align the marker on the spot.
    1st point:
    Adjust with Address1.
    Align the marker on the spot using the upper and left scroll bars while viewing the monitor.
    2nd point:
    Adjust with Address2
    Align the marker on the spot using the lower and right scroll bars while viewing the monitor.

    Notes

    - The position indicated by the marker on the PC is approximate. Therefore, adjust the marker using the monitor screen.
    - The smaller square on the PC screen indicates an approximate range that can be displayed on the screen. In the area outside of the square, the monitor is in blank state. Be aware that when the marker is in this area, you cannot correct the spot.
11. Align the marker on the spot and check if the spot can be corrected.
    Whether the spot can be corrected or not is confirmed by the checkmark in the checkbox of “Marker” of “Status” in the lower left corner of the screen, and then fine adjustment is made.
    When the spot is large in size, place a checkmark to each checkbox of “2 Point” of Address1 and Address2. Then, the correction range can be indicated by two points in the lateral direction.
12. After completion of correction, press the OK button. The correction data is written into the camera. To stop the writing, press the Cancel button.

Notes

- When it is difficult to identify the spot by chroma (color) noise, place a checkmark in the checkbox of “Chroma OFF” of “Status” in the lower left corner of the screen. Then, the spot can be easily identified because the color output is suppressed.
- When you want to cancel the correction after pressing the OK button, perform steps 1 to 9 ,and then move the marker out of the smaller square of the correction screen and press the OK button.

Section 3
Troubleshooting

3-1. Black and White Camera

Applicable models: SSC-M183/M183CE/M188CE/M383/M383CE/M388CE

1. Image is too bright.

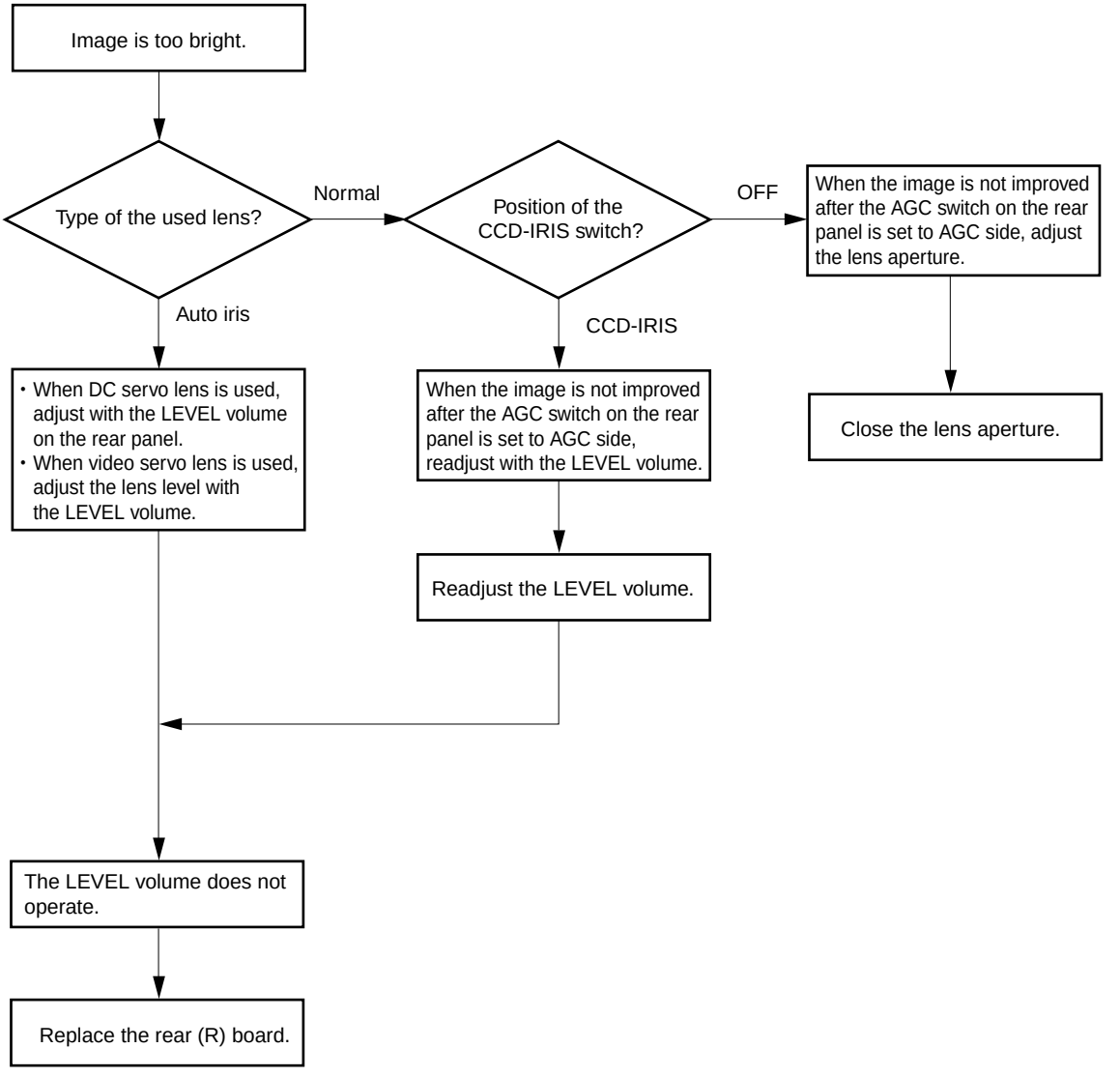


Image is too bright.
Type of the used lens?
Normal
Position of the CCD-IRIS switch?
OFF
When the image is not improved after the AGC switch on the rear panel is set to AGC side, adjust the lens aperture.
Auto iris
CCD-IRIS
• When DC servo lens is used, adjust with the LEVEL volume on the rear panel.
• When video servo lens is used, adjust the lens level with the LEVEL volume.
When the image is not improved after the AGC switch on the rear panel is set to AGC side, readjust with the LEVEL volume.
Close the lens aperture.
Readjust the LEVEL volume.
The LEVEL volume does not operate.
Replace the rear (R) board.

2. Image is too dark or invisible.

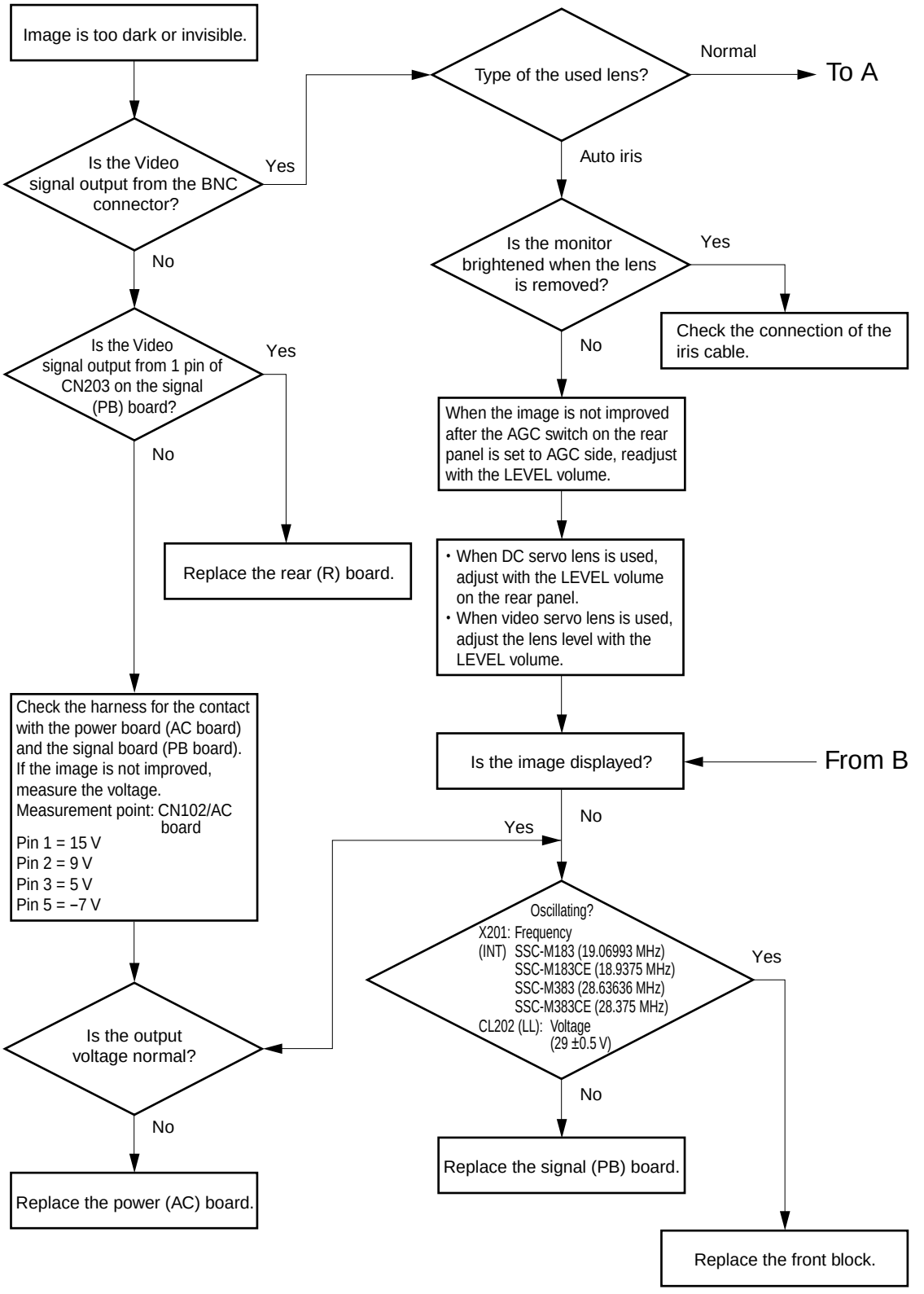
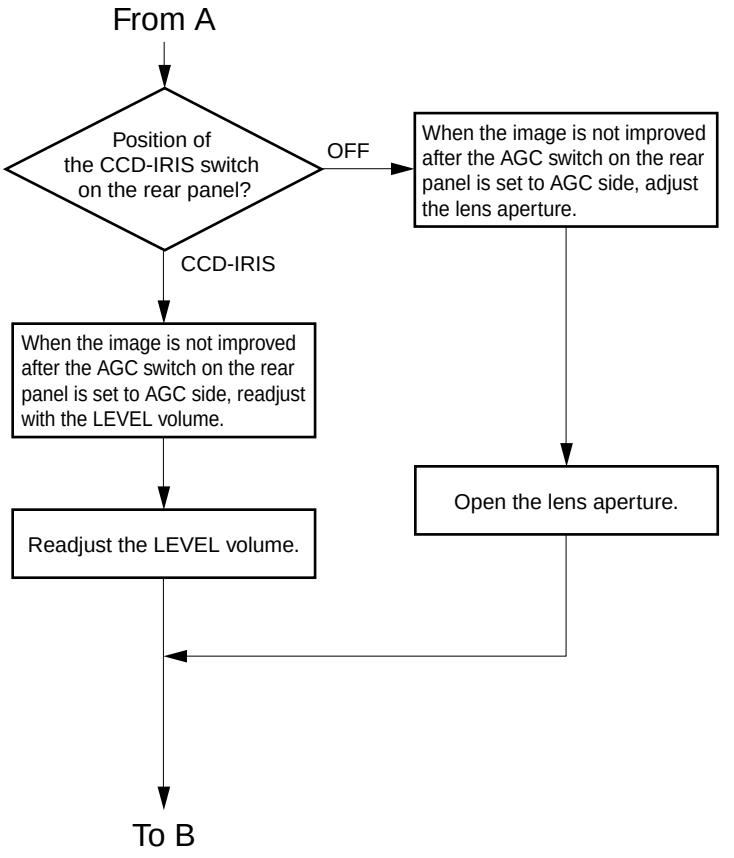


Image is too dark or invisible.
Type of the used lens?
Normal
To A
Is the Video signal output from the BNC connector?
Yes
No
Auto iris
Is the monitor brightened when the lens is removed?
Yes
Check the connection of the iris cable.
No
Is the Video signal output from 1 pin of CN203 on the signal (PB) board?
Yes
No
When the image is not improved after the AGC switch on the rear panel is set to AGC side, readjust with the LEVEL volume.
Replace the rear (R) board.
• When DC servo lens is used, adjust with the LEVEL volume on the rear panel.
• When video servo lens is used, adjust the lens level with the LEVEL volume.
Check the harness for the contact with the power board (AC board) and the signal board (PB board). If the image is not improved, measure the voltage.
Measurement point: CN102/AC board
Pin 1 = 15 V
Pin 2 = 9 V
Pin 3 = 5 V
Pin 5 = −7 V
Is the image displayed?
From B
No
Yes
Oscillating?
X201: Frequency
(INT) SSC-M183 (19.06993 MHz)
SSC-M183CE (18.9375 MHz)
SSC-M383 (28.63636 MHz)
SSC-M383CE (28.375 MHz)
CL202 (LL): Voltage
(29 ±0.5 V)
Yes
Is the output voltage normal?
No
No
Replace the signal (PB) board.
Replace the power (AC) board.
Replace the front block.


From A
Position of the CCD-IRIS switch on the rear panel?
OFF
When the image is not improved after the AGC switch on the rear panel is set to AGC side, adjust the lens aperture.
CCD-IRIS
When the image is not improved after the AGC switch on the rear panel is set to AGC side, readjust with the LEVEL volume.
Open the lens aperture.
Readjust the LEVEL volume.
To B

3-2. Color Camera

Applicable models: SSC-DC193/DC193P/DC198P/DC393/DC393P/DC398P

1. Image is too dark or invisible.

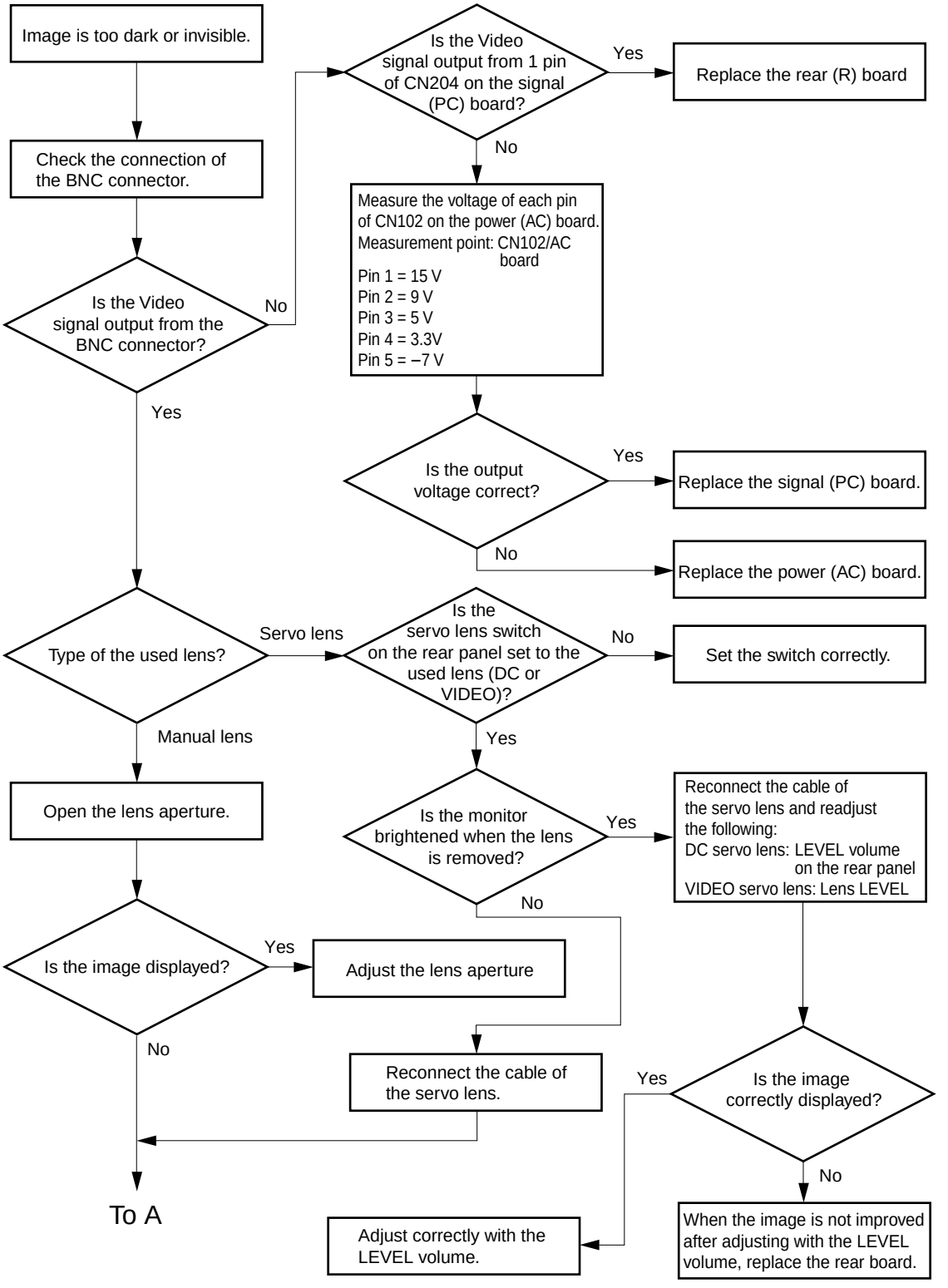
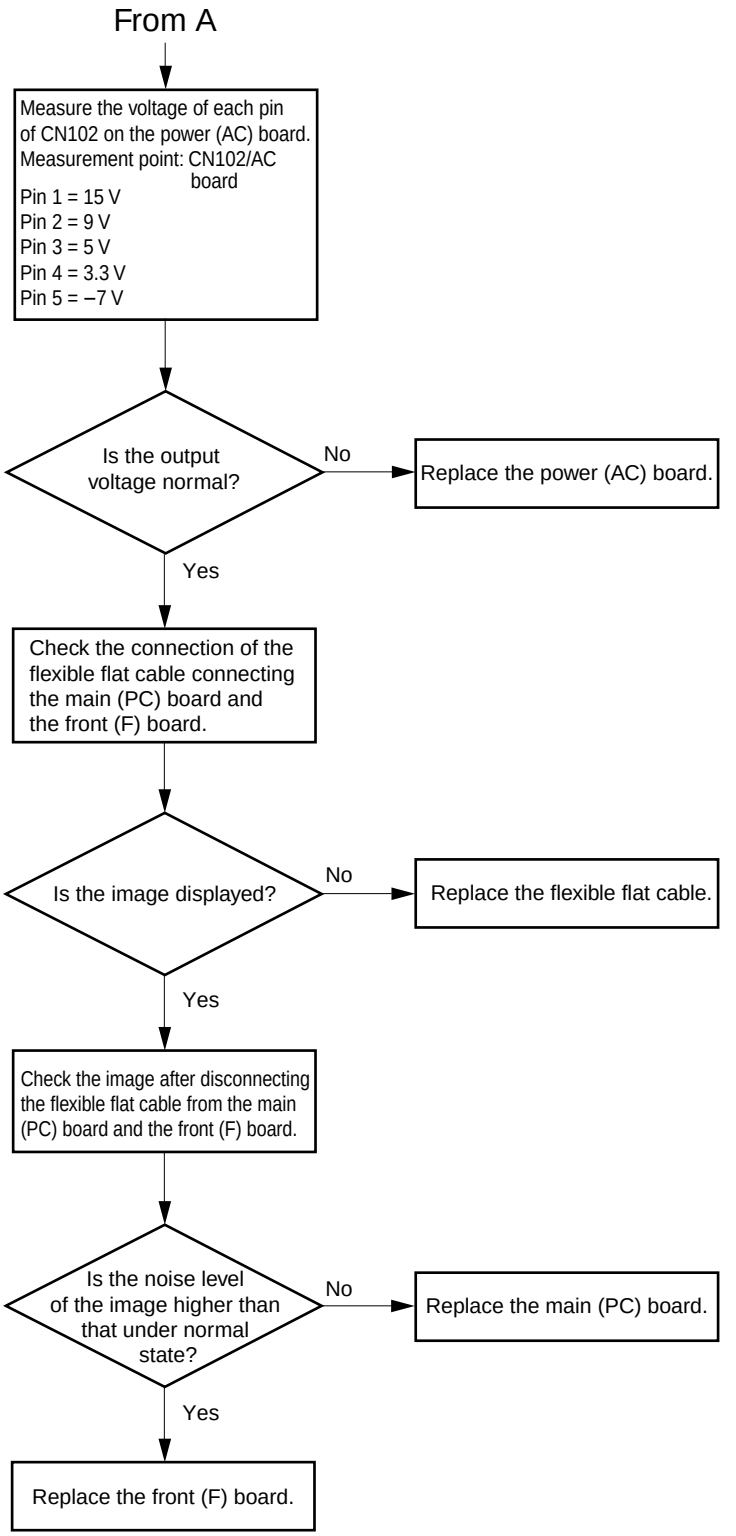
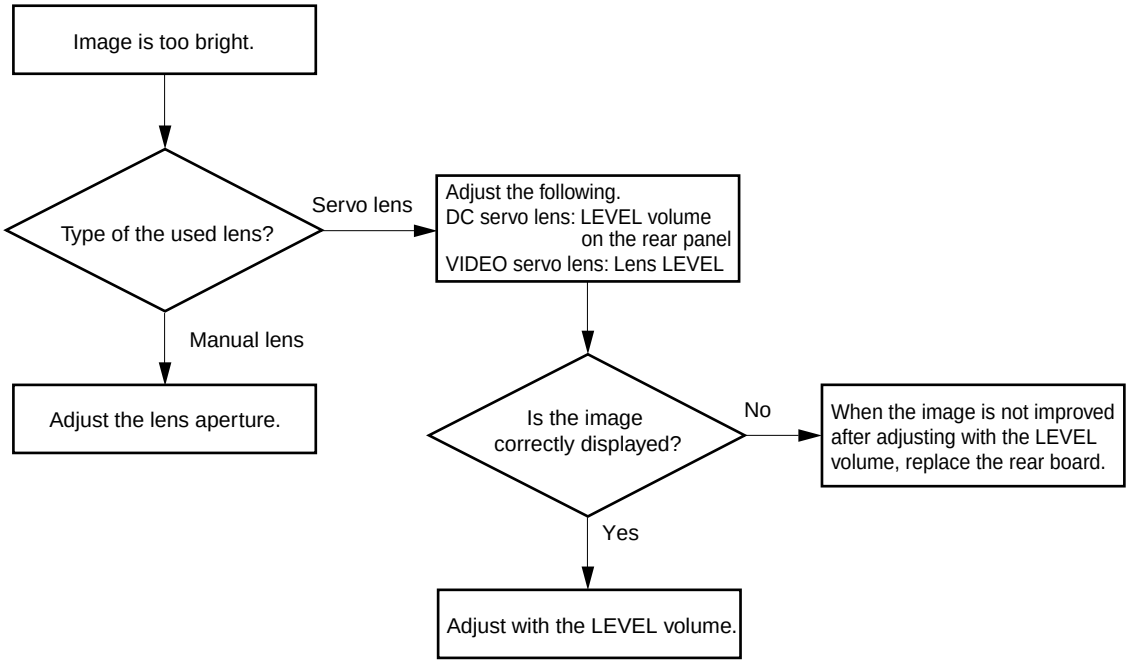


Image is too dark or invisible.
Check the connection of the BNC connector.
Is the Video signal output from the BNC connector?
No
Yes
Is the Video signal output from 1 pin of CN204 on the signal (PC) board?
Yes
Replace the rear (R) board
No
Measure the voltage of each pin of CN102 on the power (AC) board.
Measurement point: CN102/AC board
Pin 1 = 15 V
Pin 2 = 9 V
Pin 3 = 5 V
Pin 4 = 3.3V
Pin 5 = −7 V
Is the output voltage correct?
Yes
Replace the signal (PC) board.
No
Replace the power (AC) board.
Type of the used lens?
Servo lens
Manual lens
Is the servo lens switch on the rear panel set to the used lens (DC or VIDEO)?
No
Set the switch correctly.
Yes
Open the lens aperture.
Is the monitor brightened when the lens is removed?
Yes
Reconnect the cable of the servo lens and readjust the following:
DC servo lens: LEVEL volume on the rear panel
VIDEO servo lens: Lens LEVEL
No
Is the image displayed?
Yes
Adjust the lens aperture
No
Reconnect the cable of the servo lens.
Is the image correctly displayed?
Yes
No
When the image is not improved after adjusting with the LEVEL volume, replace the rear board.
Adjust correctly with the LEVEL volume.
To A


From A
Measure the voltage of each pin of CN102 on the power (AC) board.
Measurement point: CN102/AC board
Pin 1 = 15 V
Pin 2 = 9 V
Pin 3 = 5 V
Pin 4 = 3.3 V
Pin 5 = –7 V
Is the output voltage normal?
No
Replace the power (AC) board.
Yes
Check the connection of the flexible flat cable connecting the main (PC) board and the front (F) board.
Is the image displayed?
No
Replace the flexible flat cable.
Yes
Check the image after disconnecting the flexible flat cable from the main (PC) board and the front (F) board.
Is the noise level of the image higher than that under normal state?
No
Replace the main (PC) board.
Yes
Replace the front (F) board.

2. Image is too bright.



Section 4
Spare Parts

4-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

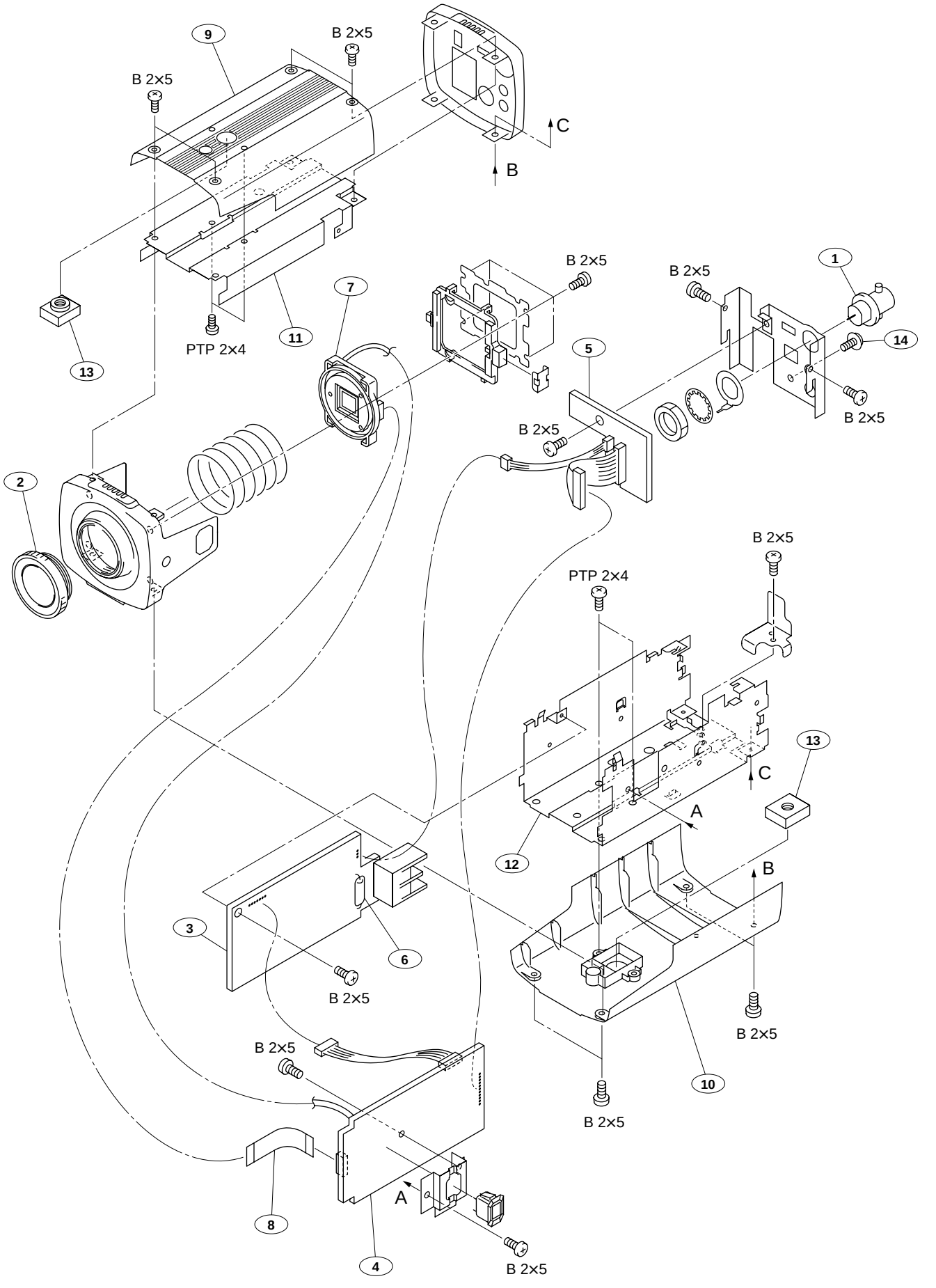
Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.
In need of repair, get components shown in the list and repair using them.

Overall Block

SSC-M183/M183CE/M383/M383CE

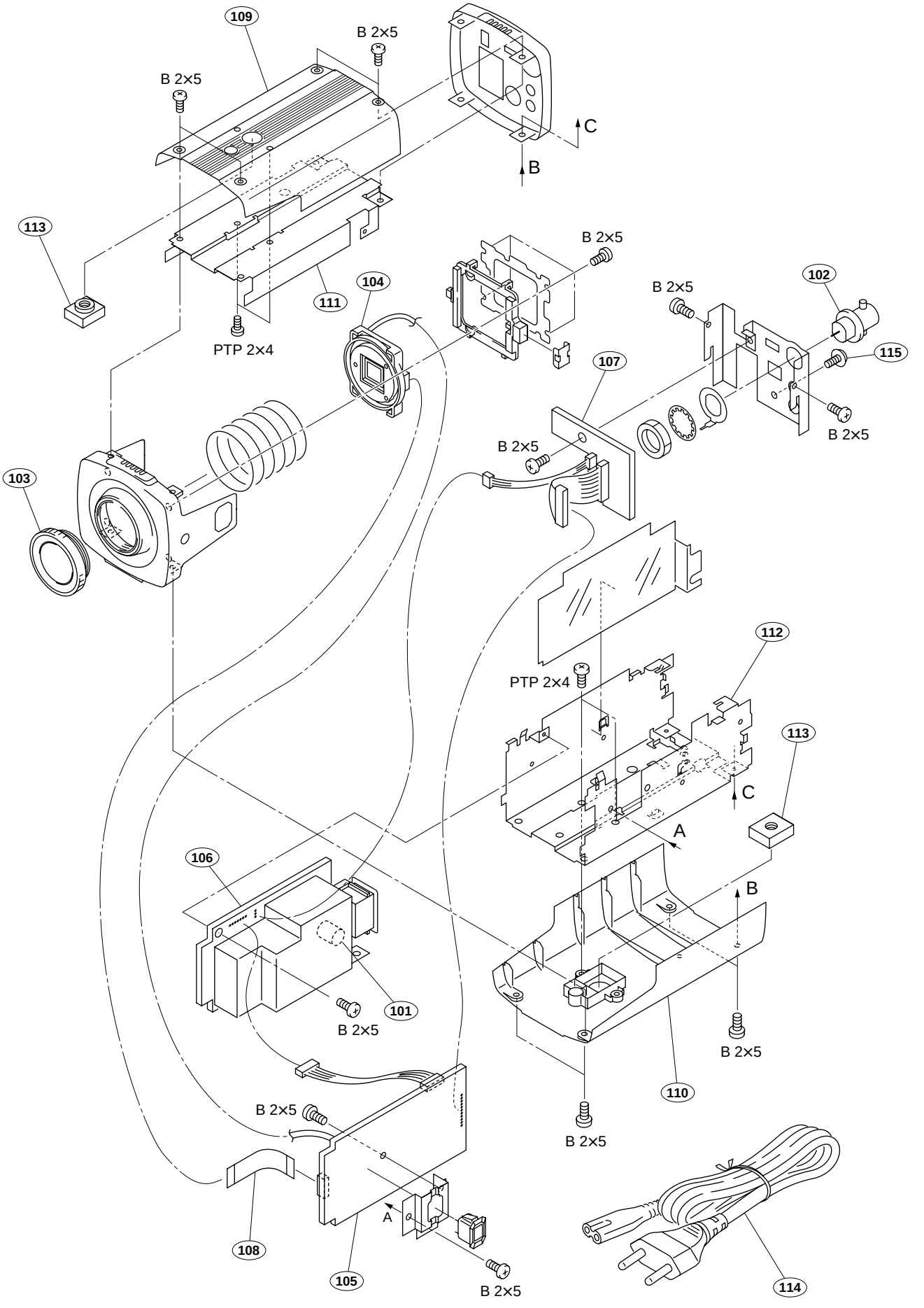


SSC-M183/M183CE/M383/M383CE

No.		Part No.	SP	Description
1		1-793-002-11	s	CONNECTOR, COAXIAL (BNC TYPE)
2		2-042-385-00	s	CAP,LENS MOUNT
3	⚠	9-885-021-23	s	MOUNTED C.BOARD,AC-24-B
4		9-885-021-24	s	MOUNTED C.BOARD,PB-2001-183 (for SSC-M183)
		9-885-021-25	s	MOUNTED C.BOARD,PB-2001-183CE (for SSC-M183CE)
		9-885-021-68	s	MOUNTED C.BOARD,PB-2001-383 (for SSC-M383)
		9-885-021-69	s	MOUNTED C.BOARD,PB-2001-383CE (for SSC-M383CE)
5		9-885-021-27	s	MOUNTED C.BOARD,R-2001-183
6		9-885-021-29	s	FUSE 2.5A 125V
7		9-885-021-30	s	CCD ASSY SR,UC (for SSC-M183)
		9-885-021-31	s	CCD ASSY SR,CE (for SSC-M183CE)
		9-885-021-71	s	CCD ASSY HR,UC (for SSC-M383)
		9-885-021-72	s	CCD ASSY HR,CE (for SSC-M383CE)
8		9-885-021-32	s	FFC 13P (0.5)
9		9-885-021-34	s	COVER (TOP)
10		9-885-021-35	s	COVER (BOTTOM) B&W SR (for SSC-M183/M183CE)
		9-885-021-73	s	COVER (BOTTOM) B&W HR (for SSC-M383/M383CE)
11		9-885-021-42	s	CHASSIS (TOP)
12		9-885-021-43	s	CHASSIS (BOTTOM)
13		9-885-021-49	s	SCREW (PLATFORM)
14		3-679-362-01	s	SCREW +B M2X4
		7-621-771-06	s	SCREW +B2X5
		7-685-102-19	s	SCREW +PTP2X4

Overall Block

SSC-M188CE/M388CE

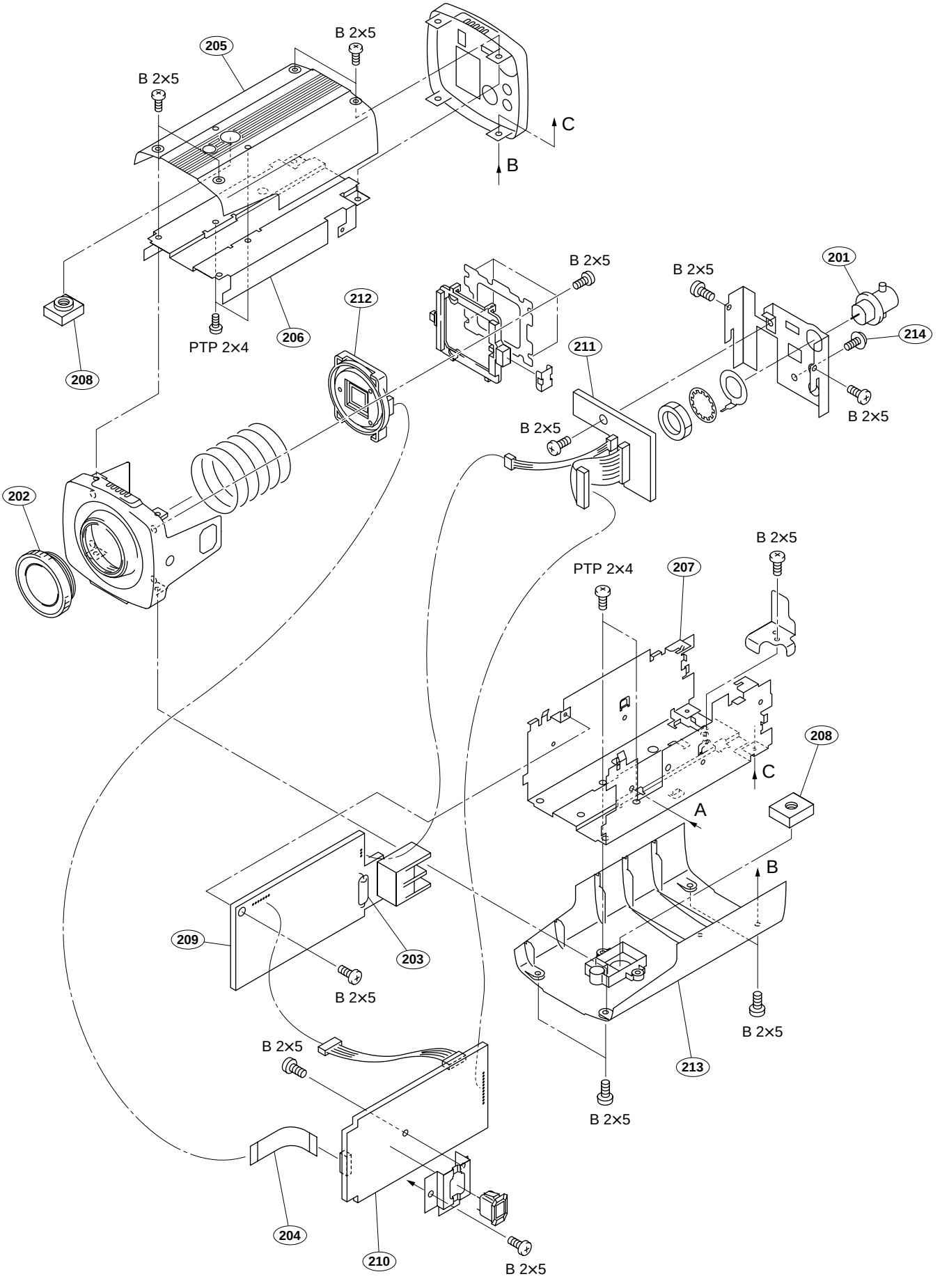


SSC-M188CE/M388CE

No.		Part No.	SP	Description
101	⚠	1-533-881-11	s	FUSE
102		1-793-002-11	s	CONNECTOR, COAXIAL (BNC TYPE)
103		2-042-385-00	s	CAP,LENS MOUNT
104		9-885-021-31	s	CCD ASSY SR,CE (for SSC-M188CE)
		9-885-021-72	s	CCD ASSY HR,CE (for SSC-M388CE)
105		9-885-021-26	s	MOUNTED C.BOARD,PB-2001-188CE (for SSC-M188CE)
		9-885-021-70	s	MOUNTED C.BOARD,PB-2001-388CE (for SSC-M388CE)
106	⚠	9-885-021-22	s	MOUNTED C.BOARD,AC-230-B COMPL
107		9-885-021-28	s	MOUNTED C.BOARD,R-2001-188
108		9-885-021-32	s	FFC 13P (0.5)
109		9-885-021-34	s	COVER (TOP)
110		9-885-021-35	s	COVER (BOTTOM) B&W SR (for SSC-M188CE)
		9-885-021-73	s	COVER (BOTTOM) B&W HR (for SSC-M388CE)
111		9-885-021-42	s	CHASSIS (TOP)
112		9-885-021-43	s	CHASSIS (BOTTOM)
113		9-885-021-49	s	SCREW (PLATFORM)
114	⚠	1-769-412-13	s	CORD,POWER (IEC)
115		3-679-362-01	s	SCREW +B M2X4
		7-621-771-06	s	SCREW +B2X5
		7-685-102-19	s	SCREW +PTP2X4

Overall Block

SSC-DC193/DC193P/DC393/DC393P

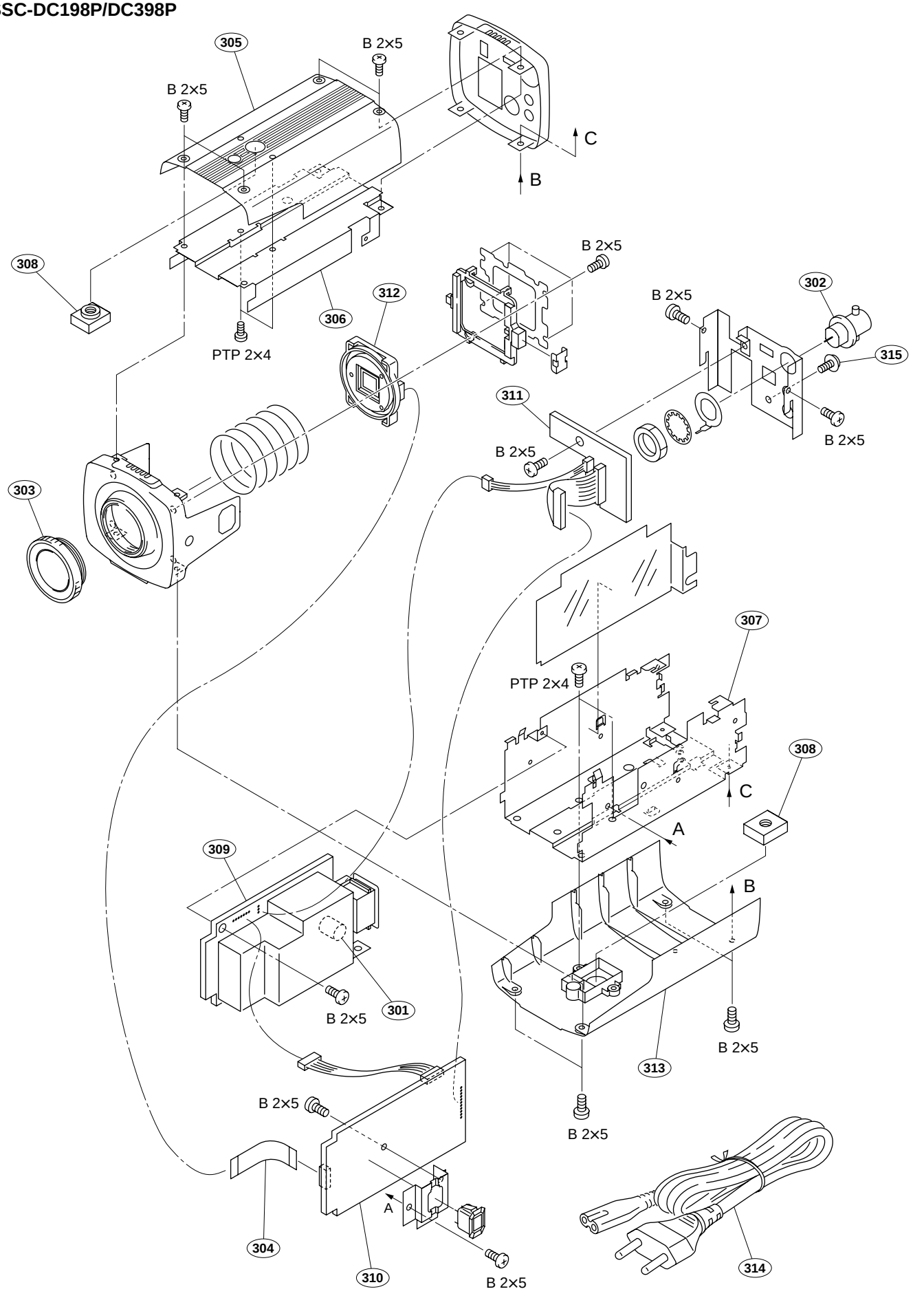


SSC-DC193/DC193P/DC393/DC393P

No.		Part No.	SP	Description
201		1-793-002-11	s	CONNECTOR, COAXIAL (BNC TYPE)
202		2-042-385-00	s	CAP,LENS MOUNT
203		9-885-021-29	s	FUSE 2.5A 125V
204		9-885-021-32	s	FFC 13P (0.5)
205		9-885-021-34	s	COVER (TOP)
206		9-885-021-42	s	CHASSIS (TOP)
207		9-885-021-43	s	CHASSIS (BOTTOM)
208		9-885-021-49	s	SCREW (PLATFORM)
209	⚠	9-885-021-53	s	MOUNTED CIRCUIT BOARD,AC-24-C
210		9-885-021-54	s	MOUNTED CIRCUIT BOARD, PC-2001-193 (for SSC-DC193)
		9-885-021-55	s	MOUNTED CIRCUIT BOARD, PC-2001-193P (for SSC-DC193P)
		9-885-021-62	s	MOUNTED CIRCUIT BORAD, PC-2001-393 (for SSC-DC393)
		9-885-021-63	s	MOUNTED CIRCUIT BORAD, PC-2001-393P (for SSC-DC393P)
211		9-885-021-57	s	MOUNTED CIRCUIT BOARD, R-2001-193
212		9-885-021-59	s	CCD ASSY SR, NTSC (for SSC-DC193)
		9-885-021-60	s	CCD ASSY SR, PAL (for SSC-DC193P)
		9-885-021-65	s	CCD ASSY HR, NTSC (for SSC-DC393)
		9-885-021-66	s	CCD ASSY HR, PAL (for SSC-DC393P)
213		9-885-021-61	s	COVER (BOTTOM) SR (for SSC-DC193/DC193P)
		9-885-021-67	s	COVER (BOTTOM) COLOR HR (for SSC-DC393/DC393P)
214		3-679-362-01	s	SCREW +B M2X4
		7-621-771-06	s	SCREW +B2X5
		7-685-102-19	s	SCREW +PTP2X4

Overall Block

SSC-DC198P/DC398P

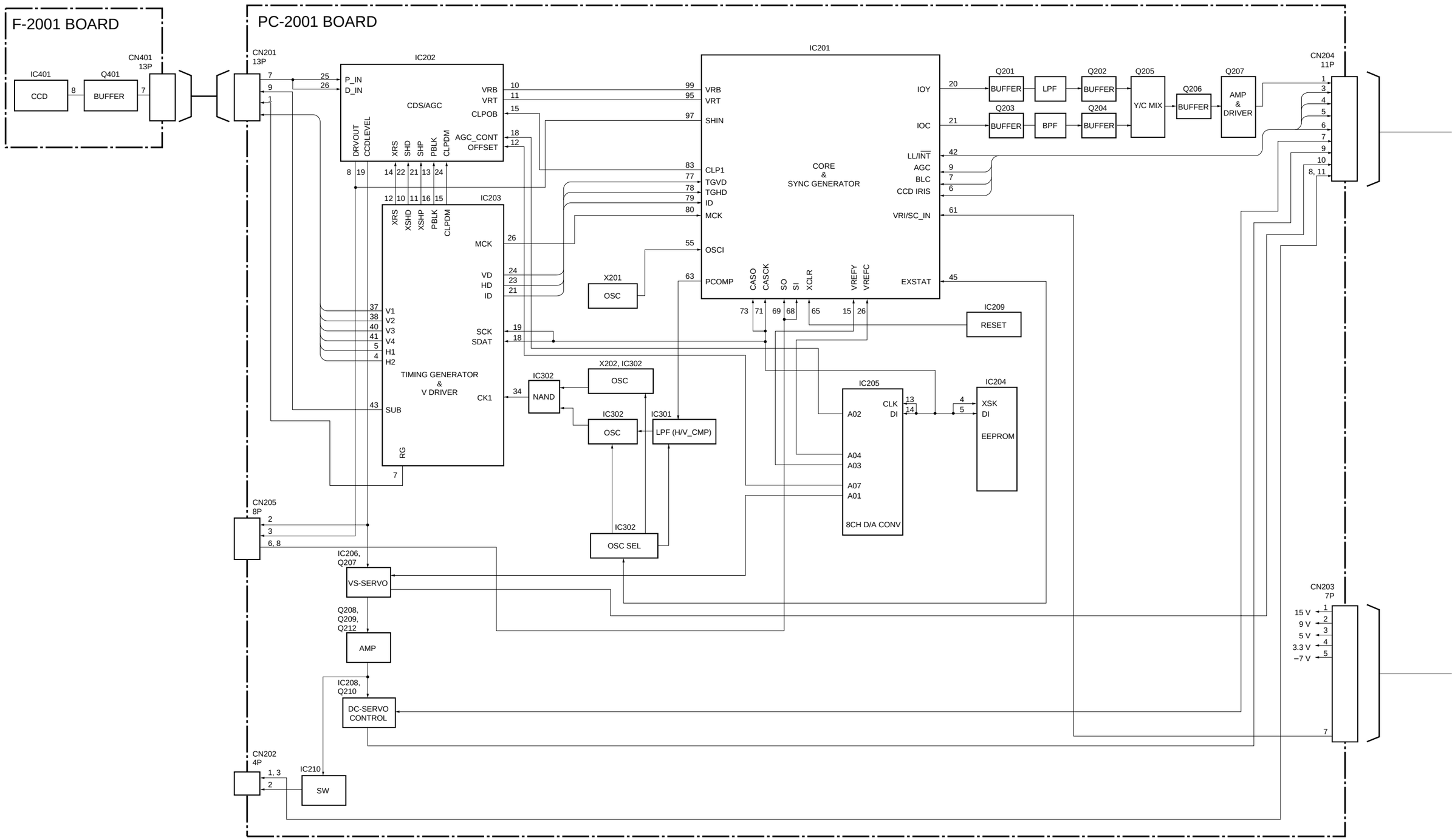


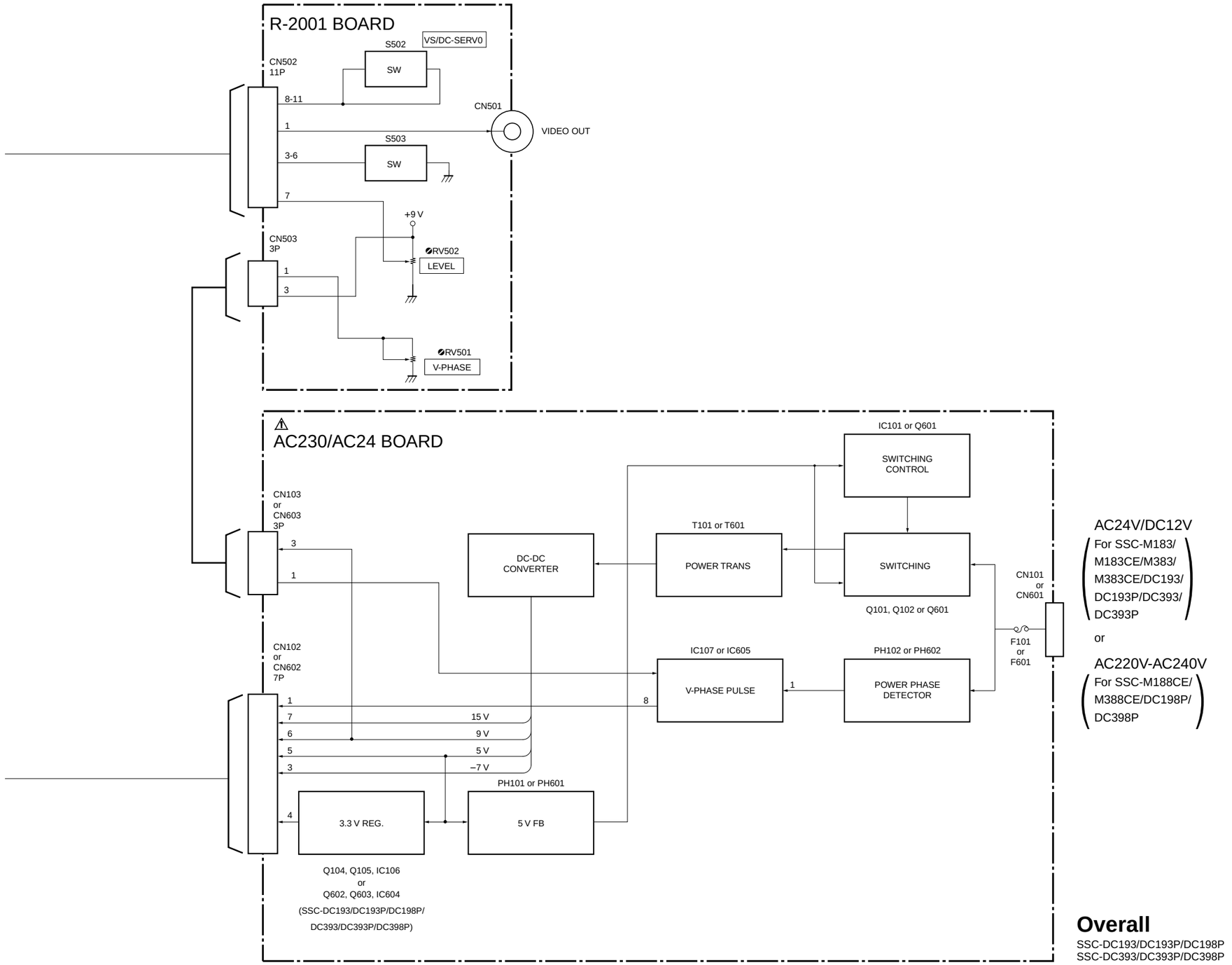
SSC-DC198P/DC398P

No.		Part No.	SP	Description
301	⚠	1-533-881-11	s	FUSE
302		1-793-002-11	s	CONNECTOR, COAXIAL (BNC TYPE)
303		2-042-385-00	s	CAP,LENS MOUNT
304		9-885-021-32	s	FFC 13P (0.5)
305		9-885-021-34	s	COVER (TOP)
306		9-885-021-42	s	CHASSIS (TOP)
307		9-885-021-43	s	CHASSIS (BOTTOM)
308		9-885-021-49	s	SCREW (PLATFORM)
309	⚠	9-885-021-52	s	MOUNTED CIRCUIT BOARD,AC-230-C
310		9-885-021-56	s	MOUNTED CIRCUIT BOARD, PC-2001-198P (for SSC-DC198P)
		9-885-021-64	s	MOUNTED CIRCUIT BOARD, PC-2001-398P (for SSC-DC398P)
311		9-885-021-58	s	MOUNTED CIRCUIT BOARD, R-2001-198
312		9-885-021-60	s	CCD ASSY SR, PAL (for SSC-DC198P)
		9-885-021-66	s	CCD ASSY HR, PAL (for SSC-DC398P)
313		9-885-021-61	s	COVER (BOTTOM) SR (for SSC-DC198P)
		9-885-021-67	s	COVER (BOTTOM) COLOR HR (for SSC-DC398P)
314	⚠	1-769-412-13	s	CORD,POWER (IEC)
315		3-679-362-01	s	SCREW +B M2X4
		7-621-771-06	s	SCREW +B2X5
		7-685-102-19	s	SCREW +PTP2X4

Section 5
Block Diagrams

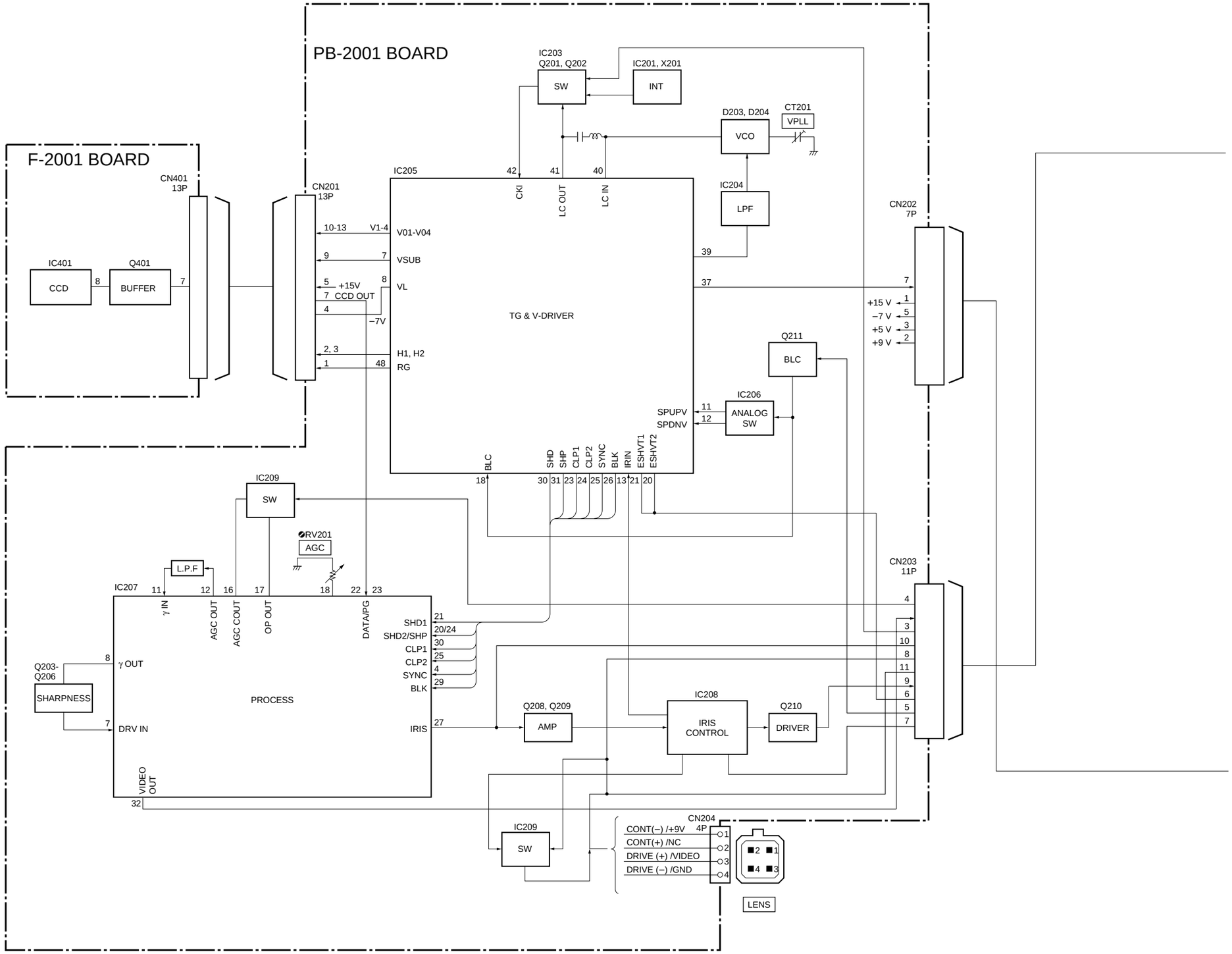
5-1. Color Camera

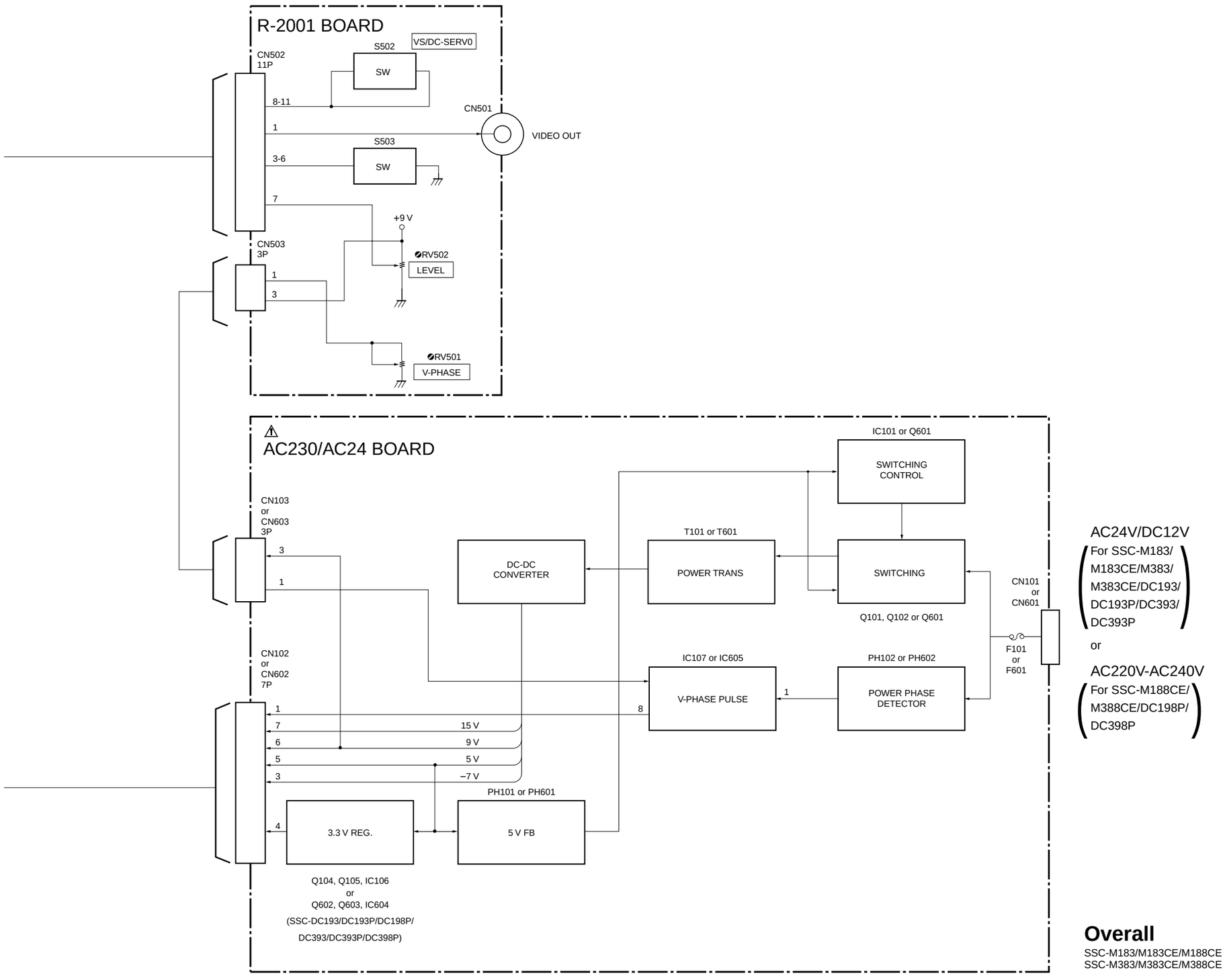




Overall
SSC-DC193/DC193P/DC198P
SSC-DC393/DC393P/DC398P

5-2. B/W Camera


PB-2001 BOARD
F-2001 BOARD
IC203
Q201, Q202
SW
IC201, X201
INT
D203, D204
VCO
CT201
VPLL
IC204
LPF
CN401
13P
CN201
13P
IC205
42
41
40
CKI
LC OUT
LC IN
CN202
7P
IC401
CCD
8
Q401
BUFFER
7
10-13
V1-4
V01-V04
9
7
VSUB
5
+15V
8
VL
7
CCD OUT
4
−7V
2, 3
H1, H2
1
48
RG
TG & V-DRIVER
39
37
7
+15 V
1
−7 V
5
+5 V
3
+9 V
2
Q211
BLC
IC206
ANALOG SW
SPUPV
SPDNV
11
12
BLC
SHD
SHP
CLP1
CLP2
SYNC
BLK
IRIN
ESHVT1
ESHVT2
18
30
31
23
24
25
26
13
21
20
IC209
SW
RV201
AGC
L.P.F
IC207
11
12
16
17
18
22
23
γ IN
AGC OUT
AGC COUT
OP OUT
DATA/PG
SHD1
SHD2/SHP
CLP1
CLP2
SYNC
BLK
21
20/24
30
25
4
29
CN203
11P
4
3
10
8
11
9
6
5
7
Q203-
Q206
SHARPNESS
8
γ OUT
7
DRV IN
PROCESS
IRIS
27
VIDEO OUT
32
Q208, Q209
AMP
IC208
IRIS CONTROL
Q210
DRIVER
IC209
SW
CN204
4P
CONT(−) /+9V
CONT(+) /NC
DRIVE (+) /VIDEO
DRIVE (−) /GND
1
2
3
4
LENS

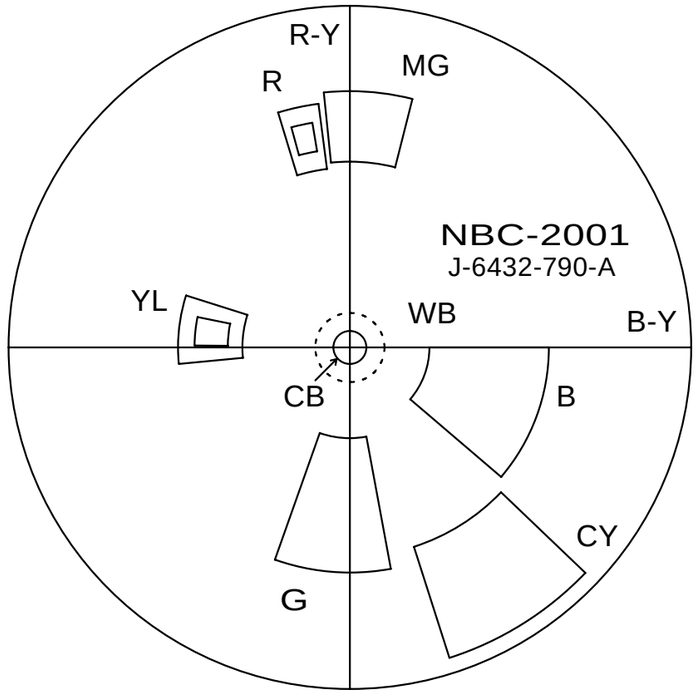


Overall

SSC-M183/M183CE/M188CE
SSC-M383/M383CE/M388CE

VECTORSCOPE SCALE

Copy on a transparent sheet.



SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

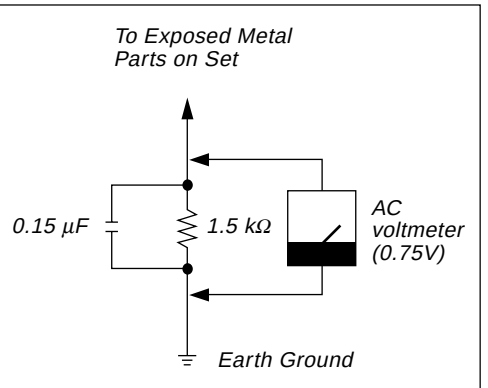


Fig A. Using an AC voltmeter to check AC leakage.

SSC-M183 (UC)
SSC-M183CE (CE)
SSC-M188CE (CE)
SSC-M383 (UC)
SSC-M383CE (CE)
SSC-M388CE (CE)
SSC-DC193 (UC)
SSC-DC193P (CE)
SSC-DC198P (CE)
SSC-DC393 (UC)
SSC-DC393P (CE)
SSC-DC398P (CE) E
9-955-358-01

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